

No. 23-1078 (L) (2:21-cv-00316)

**IN THE  
UNITED STATES COURT OF APPEALS  
FOR THE FOURTH CIRCUIT**

B.P.J., by her next friend and mother; HEATHER JACKSON,

*Plaintiff - Appellant,*

versus

WEST VIRGINIA STATE BOARD OF EDUCATION; HARRISON  
COUNTY BOARD OF EDUCATION; WEST VIRGINIA SECONDARY  
SCHOOL ACTIVITIES COMMISSION; W. CLAYTON BURCH, in his  
official capacity as State Superintendent; DORA STUTLER, in her official  
capacity as Harrison County Superintendent,

*Defendants - Appellees.*

and

THE STATE OF WEST VIRGINIA; LAINEY ARMISTEAD,

*Intervenors - Appellees*

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On Appeal from the United States District Court for the Southern District of  
West Virginia (Charleston Division)  
The Honorable Joseph R. Goodwin, District Judge  
District Court Case No. 2:21-cv-00316

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**JOINT APPENDIX – VOLUME 8 OF 9 (JA3727-JA4302)**

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Redacted Deposition of Dr. Kacie Kidd, M.D [Armistead App. 1142-1278] Appendix to Defendant-Intervenor's Motion for Summary Judgment	3/22/2023	529	JA44423
Plaintiff's Redacted Responses and Objections to Defendant-Intervenor Lainey Armistead's First Set of Requests for Admission [Armistead App. 1437-1486] in Appendix to Defendant-Intervenor's Motion for Summary Judgment	3/22/2023	529	JA4560
Plaintiff's Redacted Responses and Objections to Defendant-Intervenor Lainey Armistead's Third Set of Interrogatories and Second and Third Sets of Requests for Admission [Armistead App. 1487-1510] in Appendix to Defendant-Intervenor's Motion for Summary Judgment	3/22/2023	529	JA4610

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Redacted Harrison County Board of Education Document Production [Armistead App.1544-1547] [HCBOE 01265-01268] in Appendix to Defendant-Intervenor's Motion for Summary Judgment	3/22/2023	529	JA4643
Redacted Amended Birth Certificate of B.P.J.	N/A	N/A	JA4647

1                   IN THE UNITED STATES DISTRICT COURT  
2                   FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
3                                 \*     \*     \*     \*     \*     \*  
4     B.P.J., by her next friend and                 \*  
5     mother, HEATHER JACKSON,                     \*  
6             Plaintiffs                             \* Case No.  
7             vs.                                     \* 2:21-CV-00316  
8     WEST VIRGINIA STATE BOARD OF                 \*  
9     EDUCATION, HARRISON COUNTY BOARD OF\*  
10    EDUCATION, WEST VIRGINIA SECONDARY \*  
11    SCHOOL ACTIVITIES COMMISSION, W.            \*  
12    CLAYTON BURCH in his official                \*  
13    capacity as State Superintendent,            \*  
14    and DORA STUTLER in her official            \*  
15    capacity as Harrison County                   \*  
16    Superintendent, PATRICK MORRISEY in\*

17  
18                                 VIDEOTAPED DEPOSITION OF  
19                                 MARY D. FRY, PH.D.  
20                                 March 29, 2022  
21

22                   Any reproduction of this transcript  
23                   is prohibited without authorization  
24                   by the certifying agency.

1 his official capacity as Attorney \*

2 General, and THE STATE OF WEST \*

3 VIRGINIA, \*

4 Defendants \*

5 \* \* \* \* \*

6

7 VIDEOTAPED DEPOSITION OF

8 MARY D. FRY, PH.D.

9 March 29, 2022

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VIDEOTAPED DEPOSITION

OF

MARY D. FRY, PH.D. taken on behalf of the Intervenor  
herein, pursuant to the Rules of Civil Procedure, taken  
before me, the undersigned, Nicole Montagano, a Court  
Reporter and Notary Public in and for the Commonwealth  
of Pennsylvania, taken via videoconference, on Tuesday,  
March 29, 2022 at 10:03 a.m.

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S T I P U L A T I O N

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(It is hereby stipulated and agreed by and between  
counsel for the respective parties that reading,  
signing, sealing, certification and filing are not not  
waived.)  
-----

P R O C E E D I N G S

-----  
---  
MARY D. FRY, PH.D.,  
CALLED AS A WITNESS IN THE FOLLOWING PROCEEDING, AND  
HAVING FIRST BEEN DULY SWORN, TESTIFIED AND SAID AS  
FOLLOWS:

---  
MS. BURKDOLL: My name is Dana Burkdoll,  
CSR, Notary for the State of Kansas.

ATTORNEY TRYON: We might want to go off  
the record.

VIDEOGRAPHER: Going off the record.  
Current time reads 10:03 a.m.

OFF VIDEOTAPE

---  
(WHEREUPON, AN OFF RECORD DISCUSSION WAS HELD.)

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ON VIDEOTAPE

VIDEOGRAPHER: We are now back on the record my name is Jacob Stock. I'm a Certified Legal Video Specialist employed by Sargent's Court Reporting Services. The date today is March 29th, 2022. The current time reads 10:05 a.m. Eastern Standard Time. This deposition is being taken remotely by a Zoom conference. The caption of this case is in the United States District Court for the Southern District of West Virginia, Charleston Division. BPJ, et al. versus the West Virginia Board of Education, et al. Civil Action Number 2:21-CV-00316. The name of the witness is Mary Fry, who has already been sworn in. Will the attorneys present state their names and the parties they represent?

ATTORNEY TRYON: This is David Tryon representing the State of West Virginia and I'm with the Attorney General's Office.

ATTORNEY VEROFF: Julie Veroff with Cooley, LLP. I represent the Plaintiff. And I'll let my co-counsel introduce themselves.

ATTORNEY HARTNETT: Hi. This is Kathleen Hartnett from Cooley. I'm in the room with Julie,

1 representing Plaintiff.

2 ATTORNEY KANG: Hi. This is Katelyn  
3 Kang representing Plaintiffs.

4 ATTORNEY REINHARDT: This is Elizabeth  
5 Reinhardt with Cooley, also for Plaintiffs.

6 ATTORNEY HELSTROM: Zoe Helstrom, with  
7 Cooley, also for Plaintiffs.

8 ATTORNEY SWAMINATHAN: This is Sruti  
9 Swaminathan from Lambda Legal also for Plaintiff.

10 ATTORNEY SCRUGGS: Johnathan Scruggs with  
11 Alliance for Freedom for the intervening Defendants.  
12 And also with me on the Zoom is Rachel Csutoros, also  
13 for the intervening Defendant.

14 ATTORNEY CROPP: This is Jeffery Cropp  
15 from Steptoe & Johnson representing the Defendants  
16 Harrison County Board of Education and Superintendent  
17 Dora Stutler.

18 ATTORNEY GREEN: This is Roberta Green  
19 here on behalf of West Virginia Secondary School  
20 Activities Commission.

21 VIDEOGRAPHER: And if that is everyone we  
22 can begin.

23 ATTORNEY TRYON: Is Kelly on the line?  
24 Did I miss that?

1                    ATTORNEY GREEN:    Actually I just got a  
2                    text from Kelly that she can't locate the link.

3                    ATTORNEY VEROFF:    Let's go off the record  
4                    while we reach out to her.

5                    VIDEOGRAPHER:    Going off the record.    The  
6                    time reads 10:08 a.m.

7                    OFF VIDEOTAPE

8                    ---

9                    (WHEREUPON, A SHORT BREAK WAS TAKEN.)

10                    ---

11                    ON VIDEOTAPE

12                    VIDEOGRAPHER:    We are back on the record.  
13                    The current time reads 10:08 Eastern Standard Time.

14                    ATTORNEY MORGAN:    This is Kelly Morgan on  
15                    behalf of the West Virginia Board of Education and  
16                    Superintendant Burch.

17                    ATTORNEY TRYON:    Okay.

18                    Then I think we will move forward now.

19                    So prior to going on the record we would limit  
20                    objections to objection to privilege, objections to  
21                    scope and objections to form which would include all  
22                    other objections, and that is when we say objection  
23                    we'll preserve those objections.    Is that acceptable to  
24                    you, Julie?



1                    ATTORNEY VEROFF: Yes, thank you so much.

2                    ATTORNEY TRYON: Does anybody else have  
3 any objection to doing it that way? Okay. Then let's  
4 move forward.

5                    ---

6                    EXAMINATION

7                    ---

8                    BY ATTORNEY TRYON:

9                    Q. Hello, Professor Fry. How are you?

10                   A. Doing well. Thank you.

11                   Q. Do you prefer calling you Professor Green ---  
12 excuse me Professor Fry? Does that work?

13                   A. Sure.

14                   Q. Okay.

15                   Can you state your full name for the record  
16 please?

17                   A. Mary Diane Fry.

18                   Q. Are you represented by counsel this morning?

19                   A. Yes.

20                   Q. And who is your --- primarily representing you  
21 today?

22                   A. Julie, Julie Veroff.

23                   Q. Great. And have you been deposed before?

24                   A. I have not.

1 Q. Have you testified in court before?

2 A. One time.

3 Q. Tell me about that.

4 A. Years ago my husband and I returned from our  
5 honeymoon and we found out we had been robbed. And a  
6 neighbor had seen three guys crawling out of our bedroom  
7 window, and so I appeared in court to share what was  
8 missing when we returned.

9 Q. Well, I'm sorry. That doesn't sound like a  
10 great way to end a honeymoon. So any other times you  
11 testified at trial?

12 A. No.

13 Q. And when we're speaking, you know, since we're  
14 in a deposition, this is a communication privilege  
15 unlike any other, but one of the things that we need to  
16 make to make it easier for the court reporter to  
17 understand what we're doing. So when I ask you a  
18 question please make sure you answer verbally as opposed  
19 to just nodding your head.

20 Okay?

21 A. Okay.

22 Q. If you don't understand a question that I ask  
23 you, tell me and I'll try and rephrase.

24 All right?

1 A. Sounds good.

2 Q. And if you answer I'll have to assume that you  
3 understood the question. Do you understand that?

4 A. Yes.

5 Q. And as we stated off the record, if you need a  
6 break at any time, let us know. We will break for you  
7 and the only caveat on that is once I ask a question you  
8 have to wait until you finish your answer before we can  
9 take a break.

10 All right?

11 A. Okay. Thank you.

12 Q. Do you have any questions about this proceeding  
13 before we get started?

14 A. No.

15 Q. Okay.

16 Well, just for the record, this deposition is  
17 being conducted as on Cross Examination. And Professor  
18 Fry, did you bring any documents to the deposition  
19 today?

20 A. Yes.

21 Q. What did you bring?

22 A. I have before me my Declaration, the House Bill,  
23 my expert report and my Vitae.

24 Q. And when you talk --- mention your Declaration,

1 is this the first one that was filed in the case? Is  
2 that what you mean?

3 A. Yes.

4 Q. Is there anyone else in the room with you at  
5 this point?

6 A. No.

7 Q. What documents did you review in preparation for  
8 your deposition today?

9 A. I reviewed my statement and my Vitae and some of  
10 the Court documents, the Complaint and a cursory review  
11 of some of the other statements. I reviewed the  
12 Plaintiff's statement and her mother's statement.

13 Q. Any other Court documents besides the Complaint  
14 and the statement with the Plaintiff and the mother?

15 A. A cursory review of other expert witnesses and,  
16 yeah, any of the case documents, a cursory review.

17 Q. Which expert reports did you look at?

18 A. I couldn't call them all by name but the expert  
19 witnesses that are medical experts.

20 Q. The Plaintiff's experts or Defendants' or both?

21 A. Both.

22 Q. So there is a total of, now including yours,  
23 eight expert reports. Have you seen all of those?

24 A. You know, I'm not positive. There was a report

1 from two on each side and then a response, and so I ---  
2 and again I didn't read these in detail, but I did have  
3 a look at them.

4 Q. Okay.

5 Was there anything in particular that you were  
6 looking for when you looked through those expert  
7 reports?

8 A. No, just trying to get a sense of the case. I  
9 kept a focus on my purpose here today.

10 Q. And so are you aware of this case? Do you know  
11 who BPJ is?

12 A. Yes.

13 Q. And who is BPJ?

14 A. She is a young athlete in West Virginia who is a  
15 transathlete and wanted to play sports in her school.

16 Q. And you understand BPJ is the Plaintiff.

17 Is that right?

18 A. Yes.

19 Q. Do you know who Heather Jackson is?

20 A. Her mother.

21 Q. Have you ever spoken to either one of them?

22 A. I have not.

23 Q. So I presume by the same rationale you have not  
24 met either one of them either.

1 Correct?

2 A. I have not.

3 Q. When did you first hear about BPJ?

4 A. About a year ago I was contacted by Plaintiff's  
5 Counsel in late April.

6 Q. And of course, don't tell me anything that your  
7 counsel --- any discussions you had after you were  
8 retained by counsel, but prior to being retained by  
9 counsel --- well, let me back up.

10 At one point you were retained by counsel to be  
11 an expert in this case.

12 Right?

13 A. Right.

14 Q. When was that?

15 A. Late April, early May, I believe.

16 Q. And what were you first told about the case  
17 before you were retained?

18 A. That this case involved a young athlete who was  
19 headed to Middle School and really wanted to be able to  
20 play sports.

21 Q. Were you told which sport?

22 A. I think so at the time.

23 Q. So at this point in time do you know which  
24 sports BPJ wanted to participate in at the time that BPJ

1 filed the lawsuit?

2 A. You know, it's hard to recall. There's quite a  
3 bit of water under the bridge. I know now that she  
4 wanted to do cheerleading and run track, and I'm not  
5 sure I could tell you the exact date I knew either one  
6 of those.

7 Q. Okay.

8 Let me rephrase my question because I'm not  
9 asking what the date was, I'm asking if you now know  
10 what --- at this time what sport BPJ participated in?

11 A. Yes.

12 Q. And which one?

13 A. She participated in cheerleading and now track.

14 Q. And so it was cross-country is that the same  
15 thing as track?

16 A. Sorry, cross-country. It's a different season,  
17 cross-country.

18 Q. Is that part of track and field or is it  
19 different?

20 A. It's a different season, yeah. I mean,  
21 usually it's grouped together, track and cross-country,  
22 but I should have said cross-country. That is what I  
23 meant.

24 Q. Okay.

1           At the time that you were retained had you  
2 already prepared any report similar to what was  
3 ultimately filed in this case on your behalf?

4           A.     Yes.

5           Q.     So tell me about that.

6           A.     Okay.

7           Q.     So let me make sure we are communicating. So  
8 before you were contacted by counsel for BPJ, had you  
9 already prepared something that what was filed as your  
10 Declaration?

11          A.     Yes.

12          Q.     Okay.

13                 Tell me about that.

14          A.     Okay.

15                 In the spring of 2020 I was contacted to see if  
16 I would be willing to be an expert witness first in the  
17 Connecticut case, transathlete case and then in Idaho.  
18 And those sort of overlapped in the spring of 2020 a  
19 little bit, but I've been involved in providing expert  
20 reports for both of those.

21          Q.     Okay.

22                 So you did serve as an expert witness in the  
23 Connecticut case.

24                 Is that right?



1 A. Yes.

2 Q. Was something that you prepared filed in the  
3 Connecticut case?

4 A. Yes.

5 Q. Same thing in the Idaho case?

6 A. Yes.

7 Q. Have you served as an expert witness in any  
8 other cases besides those two?

9 A. I'm serving as an expert witness in the Florida  
10 case as well.

11 Q. But you, to date, have not testified in any of  
12 those cases.

13 Right?

14 A. That's correct.

15 Q. And you haven't been deposed in those cases  
16 either I take it.

17 Right?

18 A. That's right. I have not.

19 Q. Have you actually prepared an expert report for  
20 Florida at this point?

21 A. Yes.

22 Q. Has that been submitted to court yet?

23 A. I believe so.

24 ATTORNEY TRYON: At this point your

1 initial report that was filed with the court, the  
2 initial Declaration. Let's mark that as Exhibit-1 and I  
3 will ask the court reporter to bring that up.

4 ---

5 (Whereupon, Exhibit 1, Declaration,  
6 marked for identification.)

7 ---

8 BY ATTORNEY TRYON:

9 Q. And feel free to look at your hard copy as we  
10 are discussing these exhibits, okay, Professor?

11 A. Okay.

12 ATTORNEY VEROFF: Sorry. I think this is  
13 the expert report and I think you were asking for the  
14 Declaration.

15 ATTORNEY TRYON: Yes, right.

16 VIDEOGRAPHER: My apologies.

17 ATTORNEY TRYON: It should have the Court  
18 stamp on the left at the top as I recall.

19 VIDEOGRAPHER: I see that. My apologies.

20 BY ATTORNEY TRYON:

21 Q. So first of all, I want to establish that this  
22 is the Declaration that you first prepared for this  
23 case.

24 Is that right?

1 A. Yes.

2 ATTORNEY TRYON: And Jake, do you have  
3 that marked as Exhibit-1? Are you able to do that?

4 VIDEOGRAPHER: I don't have it marked  
5 with a sticker at the moment, but I can mark them if you  
6 want me to.

7 ATTORNEY TRYON: Yes. That would be  
8 great.

9 VIDEOGRAPHER: Okay.

10 ATTORNEY TRYON: And what I would like to  
11 do, the expert report, which is the one that you  
12 previously brought up, Jake, that would be Exhibit-2.  
13 So if you could bring that up and make sure we all  
14 understand what Exhibit-2 is.

15 ---

16 (Whereupon, Exhibit 2, Expert Report of  
17 Dr. Fry, was marked for identification.)

18 ---

19 ATTORNEY TRYON: Will you be able to mark  
20 these while we are in this proceeding, Jake.

21 VIDEOGRAPHER: I have it on my computer  
22 but I'm not on my computer at the moment. I don't think  
23 I can unless we could go off record for me to do so.

24 ATTORNEY TRYON: We will keep on going

1 and ask if you recognize what they are and then maybe  
2 during a break you can do that.

3 VIDEOGRAPHER: That works for me.

4 ATTORNEY TRYON: And for the record we  
5 will be looking at the statute, which we will be marking  
6 as Exhibit-3 to this deposition.

7 ---

8 (Whereupon, Exhibit 3, HB-3293, was  
9 marked for identification.)

10 ---

11 BY ATTORNEY TRYON:

12 Q. So now let's go to Exhibit-2, which is your  
13 current expert report. I'm going to try to manipulate  
14 my page so I can see you, Professor, at the same time.  
15 I can switch this over to another screen, but it's not  
16 working. Let's try this. All right. So looking at  
17 Number 4 --- let me back up, paragraph number three, you  
18 say you have knowledge of the matters stated in this  
19 expert report and Declaration. I have collected and  
20 cite to relevant literature concerning the issues that  
21 arise in this litigation. Do you see that?

22 A. Yes.

23 Q. So what are the issues that arise in this  
24 litigation as you understand it?

1                    ATTORNEY VEROFF: I'm sorry. I'll just  
2 object to the extent that complete paragraph three  
3 wasn't read.

4                    ATTORNEY TRYON: Okay.

5 BY ATTORNEY TRYON:

6            Q.        Okay.

7                    Feel free to read the entire paragraph if you  
8 want but I'm just asking about that specific clause.

9            A.        The issues that are relevant are that there's a  
10 categorical exclusion of transathletes. And that is of  
11 concern because of the many benefits that athletes reap  
12 from having the opportunity to participate in sports.

13           Q.        Any other issues that arise in this litigation?

14           A.        Nothing comes to mind at the moment.

15           Q.        So that's what you refer to when you say issues  
16 arise in this litigation, and you said the categorical  
17 exclusion of transgender athletes because of benefits  
18 athletes receive from sport. Is that about right? It's  
19 not exactly what you said, but that is about right?

20           A.        Yeah, because of the categorical exclusion of  
21 transgender athletes in sports that prevent them from  
22 having opportunities to reap all the benefits in sport.

23           Q.        You have said already on the record and you also  
24 say in paragraph four that in preparing this expert

1 report and Declaration I reviewed West Virginia HB-3293,  
2 the bill at issue in this litigation.

3 Right?

4 A. Yes.

5 Q. So how --- did you read the entire thing?

6 A. The entire bill?

7 Q. That's my question.

8 A. Yes, yes.

9 Q. What did the legislature say the purpose is?

10 A. Well, to prevent transgender females from  
11 participating in a sport in West Virginia.

12 Q. The bill does not use the word transgender at  
13 all, does it?

14 ATTORNEY VEROFF: Sorry. Mr. Tryon, I'm  
15 going to object. If you're going to ask the witness  
16 about the bill, if you could please put it up on the  
17 screen so she could have it in front of her.

18 ATTORNEY TRYON: We will do it in a  
19 moment. I think she's looking at it anyway, so it's  
20 been put up on the screen.

21 ATTORNEY VEROFF: Is that right,  
22 Professor Fry? Do you have a hard copy of the bill in  
23 front of you?

24 THE WITNESS: Yes.

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1 So this has previously been marked but for this  
2 deposition we will mark it as Exhibit-3.

3 BY ATTORNEY TRYON:

4 Q. So this is the House Bill that you --- the law  
5 that you reviewed, Professor Fry?

6 A. Yes.

7 Q. Excuse me. And nowhere in here does it use the  
8 word transgender, does it?

9 A. No.

10 ATTORNEY VEROFF: Objection.

11 BY ATTORNEY TRYON:

12 Q. Take a look at paragraph one --- excuse me,  
13 page one, under 18-2-25(e), line 1A, it starts A,  
14 legislature hereby finds there are inherent differences  
15 between biological males and biological females and that  
16 these differences are cause for celebration as  
17 determined by the Supreme Court of the United States in  
18 United States versus Virginia 1996, in parentheses. Do  
19 you see that?

20 A. Yes.

21 Q. Do you agree with that statement?

22 ATTORNEY VEROFF: Objection.

23 BY ATTORNEY TRYON:

24 Q. Go ahead.



1 A. Yes.

2 Q. Number two in parentheses says, these inherent  
3 differences are not a valid justification for sex-based  
4 classifications that make overbroad generalizations or  
5 perpetuate the legal, social and economic inferiority of  
6 either sex. Rather these inherent differences are a  
7 valid justification for sex-based classifications when  
8 they realistically reflect the fact that the sexes are  
9 not similarly situated in certain circumstances, as  
10 recognized by the Supreme Court of the United States in  
11 Michael V. Sonoma County Association of Intercollegiate  
12 Athletics, and NIA in parentheses or National Junior  
13 College Athletic Association. I goofed that. Sorry. I  
14 skipped a page. So continuing it said in Michael M. v.  
15 Sonoma County Superior Court 1981, in parentheses, and  
16 Supreme Court of Appeals in West Virginia in Israel v.  
17 Secondary Schools Commission in 1989 in parentheses.  
18 Other than the citations of those cases do you agree  
19 with that statement?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: I believe that it's more  
22 complex than just to have a binary understanding of  
23 males and females.

24 BY ATTORNEY TRYON:

1 Q. So let me restrict my question to this part. It  
2 says these inherent differences are a valid  
3 justification for sex-based classifications when they  
4 realistically reflect the fact that sexes are not  
5 similarly situated in certain circumstances. That  
6 clause, do you agree with or disagree with?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Yeah, I would just say that  
9 it's all --- more complex than just saying that we have  
10 males and females.

11 BY ATTORNEY TRYON:

12 Q. Okay.

13 I'm sorry, what did you say last?

14 A. Yeah, that it's more complex than just  
15 considering them --- everyone fits tightly into a male  
16 or female category.

17 Q. And so you would disagree with that statement?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: Yeah, I would agree with  
20 the first sentence, that we shouldn't use these to  
21 discriminate.

22 BY ATTORNEY TRYON:

23 Q. Does that specific clause, you don't agree with  
24 that, is that a fair statement?

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: The first sentence of number  
3 two?

4                    BY ATTORNEY TRYON:

5                    Q. I'm sorry. Let me make sure we're clear on the  
6 record. The phrase that says these inherent differences  
7 are a valid justification for sex-based classifications  
8 when they realistically reflect the fact that sexes are  
9 not similarly situated in certain circumstances, that  
10 clause, as I understand your testimony, you do not agree  
11 with in its entirety. Is that true?

12                    ATTORNEY VEROFF: Sorry, Mr. Tryon.  
13 Objection.

14                    THE WITNESS: Right, that's true.

15                    BY ATTORNEY TRYON:

16                    Q. Okay.

17                    Number three, it says in the context of sports  
18 involving competitive stellar contact --- actually,  
19 strike that.

20                    Let's move down. I want to make sure I  
21 understand. These are using terms that are defined  
22 below, so I want to see if we have a mutual agreement on  
23 the meaning of these terms. And on line 25, as shown on  
24 the left-hand side, it defines, quote, biological sex,

1 closed quote, means an individual's physical form as a  
2 male or female based solely on the individual's  
3 reproductive biology and genetics at birth. Do you see  
4 that?

5 A. Yes, I see that.

6 Q. Is that a fair definition of biological sex?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: I disagree. I think it is  
9 more complex than that.

10 BY ATTORNEY TRYON:

11 Q. Okay.

12 How would you define biological sex?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: Based on multiple factors  
15 besides just the reproductive biology in genetics at  
16 birth.

17 BY ATTORNEY TRYON:

18 Q. Okay.

19 And what would your definition be?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: I'm not sure.

22 BY ATTORNEY TRYON:

23 Q. Okay.

24 Well, the reason I ask is because we are

1 probably using these terms throughout this deposition  
2 today, so I'm trying to make sure we have a mutual  
3 understanding of what biological sex means. So I don't  
4 want to try and impose upon you a definition that you  
5 are uncomfortable with.

6 A. Okay.

7 Q. So if you could give me something that you would  
8 be comfortable with, I would appreciate it.

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Yeah, I would feel more  
11 comfortable --- yeah, I'm not sure, to be honest.

12 BY ATTORNEY TRYON:

13 Q. All right.

14 So I assume that the definition of female in  
15 here you're also uncomfortable with. Is that a fair  
16 statement?

17 A. Yes.

18 ATTORNEY VEROFF: Objection.

19 BY ATTORNEY TRYON:

20 Q. How about the definition of male, can we reach  
21 an agreement that male means an individual whose  
22 biological sex determined at birth is male?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Yes, I would not agree with

1 that.

2 BY ATTORNEY TRYON:

3 Q. You would not agree with that. Does the word  
4 male have a meaning to you?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: Yes. I feel like it's  
7 related to how people see themselves in terms of male or  
8 female.

9 BY ATTORNEY TRYON:

10 Q. So it's only --- the term male only means how  
11 somebody sees him or herself?

12 ATTORNEY VEROFF: Objection.

13 THE WITNESS: They view their identity as  
14 male and female, I think that's the critical thing.

15 BY ATTORNEY TRYON:

16 Q. And does biology have any importance at all?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: Yes, it does. It's just not  
19 the only factor.

20 BY ATTORNEY TRYON:

21 Q. So how about this, how about if we will refer to  
22 male today, male or boy, we mean someone whose birth ---  
23 on whose Birth Certificate it designates them as male or  
24 as male?

1                    ATTORNEY VEROFF:    Objection.

2            BY ATTORNEY TRYON:

3            Q.        Can we use that as a definition today?

4                    ATTORNEY VEROFF:    Objection.

5                    THE WITNESS:    I think it's more  
6 appropriate to use the term to refer to people who  
7 identify as male.

8            BY ATTORNEY TRYON:

9            Q.        So you don't think there is such a thing as a  
10 biological male?    Is that what you are telling me?

11                   ATTORNEY VEROFF:    Objection.

12                   THE WITNESS:    I think term biological  
13 male is a complex term, that a lot goes into that.

14           BY ATTORNEY TRYON:

15           Q.        You're familiar with the term cismale, right?

16           A.        Yes.

17           Q.        What does that mean?

18           A.        Well, first is somebody whose identity aligns  
19 with their birth characteristics.

20           Q.        Okay.

21                    What birth characteristics are those?

22                   ATTORNEY VEROFF:    Objection.

23                   THE WITNESS:    I think the male, female  
24 category works in general, but there is people who fall

1 in between and may not be from a biological perspective  
2 nice and tightly categorized into either of those  
3 categories. So when I say it is complex, it is is not  
4 just the way somebody was born or one particular, you  
5 know, physical characteristic or so.

6 BY ATTORNEY TRYON:

7 Q. Well, I'm just try to understand the term you  
8 just gave me. You said that cisgender is someone that  
9 identifies in the same --- identifies with the sex that  
10 corresponds with their birth characteristics. And I'm  
11 asking what you meant when you said birth  
12 characteristics.

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: Yeah, I feel like there's  
15 medical terms that go beyond my expertise. But in my  
16 understanding, someone can be born and have  
17 characteristics of cross gender. So using just a binary  
18 system where we categorize and put everyone in either a  
19 male or female category is limiting and not helpful.

20 BY ATTORNEY TRYON:

21 Q. So then what is a cisgender person?

22 ATTORNEY VEROFF: Objection.

23 THE WITNESS: Someone who may align  
24 physically at birth with one of the genders. And also



1 when I say align, those match up with how they perceive  
2 themselves along with their birth characteristics.

3 BY ATTORNEY TRYON:

4 Q. Again you use that term birth characteristics.  
5 I need to know what you mean by that.

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Again, using this in --- in  
8 --- from my perspective, I would listen to the doctors  
9 who study this and say that we can't just classify  
10 people tightly into these categories. And some people  
11 may share characteristics of either gender at birth and  
12 so it may be more complicated.

13 BY ATTORNEY TRYON:

14 Q. So we still don't even have a definition of  
15 cisgender from you.

16 ATTORNEY VEROFF: Objection.

17 BY ATTORNEY TRYON:

18 Q. So you don't know what birth characteristics  
19 are? Is that what you are telling me?

20 ATTORNEY VEROFF: Objection, asked and  
21 answered?

22 THE WITNESS: Yeah, I think some people  
23 are born and they fit nicely into these categories of  
24 male and female. I'm just acknowledging that not

1 everyone does. And if they do fit nicely into those,  
2 nicely just meaning that they are --- they, you know,  
3 are considered male at birth and they also perceive that  
4 they are than --- or the other way is female, then that  
5 would be a cisgender person.

6 ATTORNEY TRYON: Jake, how do I get to  
7 the live feed?

8 VIDEOGRAPHER: You mean like the video  
9 feed or like the real time?

10 ATTORNEY TRYON: Yes.

11 VIDEOGRAPHER: Give me one sec, I'll  
12 repost the link.

13 ATTORNEY TRYON: Are you going to put  
14 that in the chat room?

15 VIDEOGRAPHER: It should be visible now.

16 BY ATTORNEY TRYON:

17 Q. When you --- you used the term now considered  
18 male at birth. Can you tell me what you mean by that?

19 ATTORNEY VEROFF: Objection.

20 BY ATTORNEY TRYON:

21 Q. I'm not trying to trick you. I'm just trying to  
22 establish some definition so we can communicate properly  
23 today.

24 A. Yeah.

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: Yeah, I think a medical  
3 professional says that a baby has all the  
4 characteristics of a male, right. I'm just simply  
5 saying that everyone doesn't fit nice and tightly into  
6 that male or female, that there's two cross overs that  
7 the doctors seem to agree on.

8                    BY ATTORNEY TRYON:

9                    Q.        And what the doctors seem to agree on is what  
10 they put on the Birth Certificate, right, at least  
11 initially? Fair statement?

12                   ATTORNEY VEROFF: Objection.

13                   THE WITNESS: Yeah. I'd say in general  
14 doctors choose one or the other that's closest.

15                   BY ATTORNEY TRYON:

16                   Q.        So at least for purposes of today, when I say  
17 male or boy can we agree that I'm referring to someone  
18 who on the Birth Certificate, the original Birth  
19 Certificate, it is stated that that person is male?

20                   A.        I can agree to proceed that way.

21                   Q.        Okay.

22                          And the same thing with respect to female or  
23 girl.

24                          Right?

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: Yes. Can we also agree  
3 that if I -- that I can use the term transfemale to  
4 refer to someone who may share characteristics across  
5 gender and may identify as a female?

6                    BY ATTORNEY TRYON:

7                    Q. Let's be clear on that. Please tell me what  
8 your definition of trans --- let's first cite what does  
9 transgender mean?

10                   ATTORNEY VEROFF: Objection.

11                   THE WITNESS: Transgender refers to  
12 someone who may have been classified as birth as one  
13 gender but identifies as the other gender.

14                   BY ATTORNEY TRYON:

15                   Q. And then transgender girl, can you give me your  
16 definition of that?

17                   A. Yes, someone who may have been assigned the male  
18 sex at birth and identifies as female.

19                   Q. And then transgender boy?

20                   A. Someone who may have been assigned female ---  
21 assigned a female gender at birth but perceives ---  
22 identifies with a male sex, male gender.

23                   Q. Now, when I asked you about transgender you said  
24 someone classified at birth. And then when I asked you

1 about transgender girl you said assigned. Is there a  
2 difference between classified and assigned in your mind?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: No, there wasn't a  
5 distinction there.

6 BY ATTORNEY TRYON:

7 Q. Okay.

8 And could that sex of a child be assigned  
9 before birth?

10 ATTORNEY VEROFF: Objection.

11 THE WITNESS: Yeah, possibly.

12 BY ATTORNEY TRYON:

13 Q. Going back to the bill itself, on line 12, on  
14 page two, in the context of sports involving competitive  
15 skill or contact biological males and biological females  
16 are not, in fact, similarly situated. Do you agree with  
17 that statement?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: I'm not sure what that  
20 statement means by the fact similarly situated.

21 BY ATTORNEY TRYON:

22 Q. Okay.

23 Let's go to the next sentence. Biological  
24 males would displace females to a substantial extent if

1 permitted to compete on teams designated for biological  
2 females and then it cites a case. Do you agree with  
3 that statement?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: I believe there can be a  
6 fair playing ground for people who are born male and who  
7 receive treatment, follow the rules and play the sport  
8 for them to be able to participate as females.

9 BY ATTORNEY TRYON:

10 Q. So I take it you do not fully agree with that  
11 statement.

12 Is that a fair statement?

13 A. Yeah.

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: I do not.

16 BY ATTORNEY TRYON:

17 Q. Item Number 5, line 21 says, classification of  
18 teams according to biological sex is necessary to  
19 promote equal athletic opportunities for the female sex.  
20 Do you agree with that statement?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: Not if it means excluding  
23 transgender athletes.

24 BY ATTORNEY TRYON:

1 Q. Okay.

2 I need to apologize at this point. On the  
3 floor where I'm at they are doing construction, so  
4 periodically you may hear pounding or other noise, and  
5 I'm sorry about that.

6 Let me ask you about the definition of another  
7 word that appears periodically, the word arbitrary. And  
8 I looked that up in a dictionary, an online dictionary,  
9 Cambridge.org, and the definition it gave me was based  
10 on chance rather than being planned or based on reason.  
11 Is that a fair definition of arbitrary?

12 ATTORNEY VEROFF: Objection.

13 THE WITNESS: I'm not sure.

14 BY ATTORNEY TRYON:

15 Q. Okay.

16 What is your definition of arbitrary?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I'm not sure.

19 BY ATTORNEY TRYON:

20 Q. You have a Bachelor's Degree.

21 Right?

22 A. I do.

23 Q. And a Master's Degree.

24 Right?

1 A. Yes.

2 Q. So I recall you also have a Ph.D.

3 Is that right?

4 A. That is right.

5 Q. And you can't define for me what arbitrary  
6 means?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: No, not at the moment.

9 BY ATTORNEY TRYON:

10 Q. You used the word arbitrary in this report, yet  
11 you don't know what it means?

12 ATTORNEY VEROFF: Objection.

13 THE WITNESS: Yeah. Do you want to go to  
14 where I used it?

15 BY ATTORNEY TRYON:

16 Q. No. I want to know if you, in fact, don't know  
17 what arbitrary means?

18 ATTORNEY VEROFF: Objection. I think the  
19 witness has asked to see where term is used in her  
20 report. And it would be helpful to show it to her for  
21 context.

22 ATTORNEY TRYON: Thank you, Counsel. I  
23 would like the witness to tell me how she doesn't know  
24 --- since she has a Ph.D., she can't tell me what



1 arbitrary means. And then you won't even agree with the  
2 definition that I found in the Cambridge.org Dictionary.

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: Can you repeat that  
5 definition again?

6 BY ATTORNEY TRYON:

7 Q. Based on chance rather than being planned or  
8 based on reason.

9 A. Okay.

10 I'm going to go back and accept that.

11 Q. Okay.

12 In paragraph seven of your report --- we can go  
13 back to the report now. This is Exhibit-2. In  
14 paragraph seven that is on the screen or you can look at  
15 your hard copy, you mention that you spent five years  
16 teaching physical education and coaching tennis at  
17 schools and summer camps. Tell me a little bit about  
18 your coaching tennis.

19 A. Yes, I was the head coach of both the boys and  
20 the girls team, high school. And the --- we had a  
21 varsity and a junior varsity team. They competed in the  
22 fall season. That was a team competition. And then the  
23 individual in spring, so it is a year-round sport in  
24 Texas.

1 Q. So why did they divide it between varsity and  
2 junior varsity?

3 A. Because some of the kids are --- because it  
4 gives the more advanced athletes a chance to compete at  
5 the varsity level and can be very inclusive and give a  
6 lot of kids an opportunity to play also as well with a  
7 junior varsity.

8 Q. And you had no problem with that, right?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: That's right.

11 BY ATTORNEY TRYON:

12 Q. And then you said they divided it into boys and  
13 girls teams. Why did they do that?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: Because, in general, that  
16 classification works, but there are exceptions to it.

17 BY ATTORNEY TRYON:

18 Q. And when you said boys, what did you mean by  
19 boys?

20 A. I mean those who may have been classified as a  
21 male in their lives and also identify that way.

22 Q. So the team, the tennis team was based on those  
23 who were born, classified as males and also identified  
24 that way?

1 A. Again, I can't speak for every athlete.

2 Q. And then when you said there was a girls team,  
3 what did that mean? What did you have to be to be on  
4 the girls team?

5 A. Yeah. And in general, they are females and see  
6 that classification as appropriate and participate as  
7 females.

8 Q. And why is that classification appropriate for  
9 tennis?

10 ATTORNEY VEROFF: Objection.

11 THE WITNESS: I think it's in general  
12 appropriate to have --- to let males and females compete  
13 separately.

14 BY ATTORNEY TRYON:

15 Q. Is that because in general males are better at  
16 tennis?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I wouldn't agree with that.

19 BY ATTORNEY TRYON:

20 Q. Then why is it appropriate to let them compete  
21 separately?

22 ATTORNEY VEROFF: Objection.

23 THE WITNESS: Yeah, I think males would,  
24 in general, due to, you know, their physical

1 characteristics would have a --- could have an  
2 advantage.

3 BY ATTORNEY TRYON:

4 Q. What kind of advantage?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: Yeah, greater --- greater  
7 testosterone levels, which can lead to --- which can  
8 impact muscle mass and size.

9 BY ATTORNEY TRYON:

10 Q. As the coach, did you actually observe that  
11 there was a difference, performance difference between  
12 boys and girls teams?

13 A. I would ---.

14 Q. I'm sorry. Let me rephrase that. As the coach,  
15 did you actually observe that there was a performance  
16 difference between boys and girls?

17 A. Yes.

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: I think if you compare the  
20 mean level of ability across the two, then there is a  
21 moderate difference, but there was --- there was big  
22 differences within each gender. I had some very  
23 talented males and some males that were not very  
24 talented. And the same with females. Ability levels

1 really varied. And I had females across my years  
2 coaching high school that were stronger than males. So  
3 it is not a --- you have to be careful to say that every  
4 male out performs every female because that has not been  
5 my experience.

6 BY ATTORNEY TRYON:

7 Q. Understood. On the average, though, is it safe  
8 to say that the boys out perform the females?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Right, if we just look at a  
11 mean across the gender, yes.

12 BY ATTORNEY TRYON:

13 Q. Okay.

14 You used the word mean instead of average. Can  
15 you explain?

16 A. Yes, on average.

17 Q. Okay.

18 I just want to make sure we are communicating  
19 correctly.

20 A. Sure.

21 Q. Have you ever done --- looked at the standard  
22 deviation, the bell curve for each of those groups?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: I'm familiar with the bell

1 curve. Do you mean ---?

2 BY ATTORNEY TRYON:

3 Q. Okay.

4 Have you looked at the bell curve for  
5 performance between those two groups of tennis players,  
6 boys versus girls?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Okay.

9 I have been --- I haven't collected data  
10 that I could share from when I coached high school.  
11 What I could say is that, if we took any skill, let's  
12 say their ability to serve accurately or hit a crisp  
13 volley or hit a solid backhand across the court, that  
14 their --- those bell curves are very close to each  
15 other, but overall for just looking at the two groups  
16 the boys could have a slight advantage. But those two  
17 bell curves, if we are looking at the bottom of those,  
18 you're going to say there is tremendous variability with  
19 the males and females. And so it is easy to get kind of  
20 focused on this small mean difference across gender when  
21 there is huge differences across, you know, each gender  
22 as well.

23 BY ATTORNEY TRYON:

24 Q. Understood. As far as the first standard

1 deviation, do you know if the first standard deviation  
2 would overlap between two groups?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: I think so in high school  
5 tennis, right.

6 BY ATTORNEY TRYON:

7 Q. Okay.

8 Have you actually --- that's from just your  
9 generalized experience, but have you actually done a  
10 data compilation to determine that?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: No.

13 BY ATTORNEY TRYON:

14 Q. Do you know of such a thing, any studies that do  
15 that?

16 A. I couldn't identify specifically studies, but  
17 when I see these things like if I --- if I pick up the  
18 Kansas City paper or after the marathon I see males and  
19 females interspersed all the way through with their  
20 times, right. So it's not a thing where every male that  
21 ran the marathon out performed every female that ran the  
22 marathon. So I think it's pretty consistent that those  
23 differences are smaller, too, if we are not talking  
24 about the elite of elite athletes.

1 Q. When you were coaching, how long did you coach?

2 A. I coached four years full time and then my  
3 graduate program at Greensboro I was --- I had an  
4 assistantship at a Middle School to teach --- to assist  
5 teachers with teaching physical education.

6 Q. In paragraph eight of your report it says that  
7 you graduated with a Master of Science in sports  
8 psychology/pedagogy from the University of North  
9 Carolina in Greensboro, North Carolina, in 1990. During  
10 that did you take any classes in sports biomechanics?

11 A. I believe I took one.

12 Q. What is sports biomechanics?

13 A. Sports biomechanics looks at the study of  
14 movement and how to optimize skills and movement  
15 patterns.

16 Q. And is it fair to say that the biomechanics of  
17 males and females are different?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: With regard to everything  
20 across the board, like walking?

21 BY ATTORNEY TRYON:

22 Q. In athletics --- well, we'll talk about in  
23 walking. Is it different in walking?

24 ATTORNEY VEROFF: Objection.



1                   THE WITNESS: I would say there is more  
2 similarity across the genders, more variability with age  
3 than across genders on most movements.

4 BY ATTORNEY TRYON:

5       Q.       Okay.

6               So you don't think there is a difference  
7 between males and females in the context of  
8 biomechanics?

9                   ATTORNEY VEROFF: Objection.

10                  THE WITNESS: Yeah, I think I just need  
11 something more specific, right, if males in general can  
12 generate more power or something in a particular  
13 movement, that may be the case. It is not my area of  
14 expertise.

15 BY ATTORNEY TRYON:

16       Q.       Okay. Fair enough. Are you a psychologist?

17       A.       I am not.

18       Q.       Are you a psychiatrist?

19       A.       No.

20       Q.       Have you had any clinical experience seeing any  
21 patients?

22       A.       Not clinical experience, no.

23       Q.       Other types of experience seeing patients?

24       A.       No.

1 Q. And so I a presume you never treated any  
2 patients?

3 A. That's correct.

4 Q. Have you ever worked as a counselor or social  
5 worker?

6 A. No.

7 Q. Have you ever counseled with kids on either a  
8 formal basis or informal basis on mental health issues?

9 A. I'm on the educational side of sports psychology  
10 and so I might provide educational information, right,  
11 about how to develop strong mental skills, right, that  
12 are going to help you enjoy your sport better and  
13 perform better, right. It's all on the educational  
14 side, so not on a diagnosis side or treatment of mental  
15 health. That would be beyond my credentials and I would  
16 refer athletes to someone else.

17 Q. Okay.

18 Have you ever counseled with kids on gender  
19 dysphoria issues?

20 A. I have not.

21 Q. Have you counseled with kids or young adults on  
22 transgender issues?

23 A. I have not. To say that would be beyond my  
24 expertise and training.

1 Q. Fair enough.

2 ATTORNEY TRYON: Well, we've been going a  
3 little over an hour. I'm happy to keep on going. But  
4 if you need a break, let me know.

5 ATTORNEY VEROFF: I think it would be  
6 good to take a short break.

7 VIDEOGRAPHER: Going off the record. The  
8 current time reads 11:15 Eastern Standard Time.

9 OFF VIDEOTAPE

10 ---

11 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

12 ---

13 ON VIDEOTAPE

14 VIDEOGRAPHER: We are back on the record.  
15 The current time reads 11:27 Eastern Standard Time.

16 BY ATTORNEY TRYON:

17 Q. In paragraph nine of your report you refer to a  
18 Coacher's Guide of Maximizing Youth Sport Experience.  
19 And did you write that whole book?

20 A. With colleagues, we did.

21 Q. Does that book address transgender athletes at  
22 all?

23 A. It addresses how to create an environment that  
24 can be inclusive and help all athletes have a great

1 experience. It's not specifically written --- you know,  
2 it's not about about transgender athletes overall. What  
3 I would say they're included in the sense that it is  
4 beneficial to be inclusive in sport.

5 Q. Is the term transgender, does it appear in the  
6 book at all?

7 A. Beyond -- I'm not sure.

8 Q. When was that book written?

9 A. It was released in 2020.

10 Q. When was the first time that you became aware of  
11 the issue of transgender girls participating in girls  
12 sports?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: I'm not sure. Years ago. I  
15 take conferences regularly, or sports psychology  
16 conference, and there has been sessions for a long time.

17 ATTORNEY TRYON: Let me ask you to take a  
18 look at some documents. Jake, if you can pull up the  
19 document Cortisole and Stress Response during the Game  
20 and Practice in Female Collegiate Soccer Players.

21 VIDEOGRAPHER: Do you want that marked?

22 ATTORNEY TRYON: Yes, this would be  
23 Number 4.

24 ---

1 (Whereupon, Exhibit 4, Article by Dr.  
2 Fry, was marked for identification.)

3 ---

4 ATTORNEY TRYON: And just for the court  
5 reporter, my name is spelled T-R-Y-O-N.

6 BY ATTORNEY TRYON:

7 Q. Okay.

8 This is a document, an article that you wrote,  
9 correct, Professor Fry?

10 A. This was a Master's thesis from one of our  
11 students and I served on her committee.

12 Q. I see. Who is Andrew Fry?

13 A. He's my husband.

14 Q. Okay.

15 Why did this document only focus on female  
16 soccer players?

17 A. Typically, in a Master's thesis you kind of can  
18 keep things smaller and tighter, and it's not like a  
19 doctoral dissertation I think would be one of the key  
20 reasons. There's probably been less research with  
21 females and cortisol because it's a little more  
22 complicated with menstrual cycles and all that, too.  
23 And I think this athlete --- I'm sorry, this student was  
24 very interested in any female student to the literature.

1 Q. Is there a difference in cortisol and stress  
2 responses between male and female soccer players?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: Yeah, you know, this is ---  
5 I would need to review this. And again, it's beyond my  
6 expertise in looking at gender differences in cortisol.

7 BY ATTORNEY TRYON:

8 Q. So I'm a little puzzled. You said that you're  
9 on the committee to review the students' work. Did I  
10 get that about right?

11 A. I helped with this project, but this was her  
12 thesis research, and she also had some I think  
13 psychological measures. This has been a while. It was  
14 published in 2007, but she was --- I'm not even sure I  
15 could tell you what year she graduated or if this was  
16 right over, but you know, quite a bit of time has  
17 passed. I would have to go back and review this and it  
18 is not my primary area of expertise, but I was an author  
19 on this paper.

20 Q. So when you say you're an author, does that mean  
21 you wrote portions of it or just supervised it?

22 A. You know, it varies and I would have to go back  
23 to this one. Honestly, in reviewing it, I haven't  
24 looked at this in a long time.

1 Q. Do you know how the student identified if  
2 someone was a female?

3 A. I think she used a female collegiate soccer team  
4 and so those were female athletes on the team.

5 Q. Do you know if any of those female athletes were  
6 transfemales?

7 A. No, I don't.

8 Q. Would that have made a difference for the study  
9 if some were transfemales and others were what I would  
10 call biological females?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I don't know. And I think  
13 it would depend on where the transathletes were.

14 BY ATTORNEY TRYON:

15 Q. Where they were? What do you mean?

16 A. I'm sorry, where they --- I'm sorry, Dana just  
17 came in with cords and I got distracted for a second.  
18 With where they were in the transitioning process.

19 ATTORNEY TRYON: Okay.

20 If you could bring up the next document,  
21 Examination of the Psychometric Properties of Perceived  
22 Motivational Climate in Sports Questionnaire.

23 VIDEOGRAPHER: I'm sorry. Can you repeat  
24 that title?

1                    ATTORNEY TRYON: Yes. Examination of the  
2 Psychometric Properties of the Perceived Motivational  
3 Climate in Sports Questionnaire.

4                    VIDEOGRAPHER: Okay.

5                    Just give me one moment?

6                    THE WITNESS: You may want to take this  
7 home for bedtime reading tonight, right.

8                    ATTORNEY TRYON: This is now marked as  
9 Exhibit-5, I believe.

10                    ---

11                    (Whereupon, Exhibit 5, Article, was  
12 marked for identification.)

13                    ---

14                    BY ATTORNEY TRYON:

15                    Q. Have you seen this document before?

16                    A. I have. It's been a while since I looked at it,  
17 but, yeah, I have.

18                    Q. And what is the purpose of this document?

19                    A. So there was a measure, a perceived motivational  
20 climate of sports questionnaire. And Maria Newton in  
21 her dissertation, she wanted to expand on the measure  
22 and create little subscales within what we call task in  
23 ego involving climates. And I think she ran it with a  
24 couple of samples here just to be able to test the



1 psychometrics of the measure.

2 Q. Why was this one limited to female athletes?

3 A. It's a good question. Why does any researcher  
4 includes females, males and/or both? Maria had access  
5 to, as I remember, a massive tournament, volleyball  
6 tournament, and could get the group onboard and be able  
7 to access a lot of teams because research is hard to do.  
8 You really need to be able to access a number of teams  
9 and she was able to do that with this study.

10 Q. So you don't know why it would be separated to  
11 be only for female athletes?

12 A. I think she was only interested in volleyball  
13 and in particular females.

14 Q. Is there a difference in volleyball between  
15 female and male athletes?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: A difference in what sense?

18 BY ATTORNEY TRYON:

19 Q. In psychometric properties, the perceived  
20 motivational climate?

21 A. Okay.

22 So while she didn't look at that in the study  
23 because she only had females, so we just have to look at  
24 the broader literature, right. And the theory

1 predictions hold up in that athletes can perceive the  
2 climate as very task involving or ego involving, right.  
3 And in some samples athletes, you know, males or females  
4 may see it one way or another more, but the predictions  
5 just align consistently that if you perceive the task  
6 involving climate at least to good things. Like people  
7 have more fun and try harder, they're more committed to  
8 their sports, they have better relationships with  
9 others, those kind of things.

10 Q. All right.

11 ATTORNEY TRYON: I'm finished with that  
12 exhibit then. Let me then ask you some other questions.

13 BY ATTORNEY TRYON:

14 Q. Is your expertise limited to sports psychology?

15 A. Sports psychology is a broad term, you know, but  
16 yes, I would say that is my expertise. I don't know if  
17 you would consider youth sport as a part of that.

18 Q. I'm sorry. I missed what you said.

19 A. The youth sport.

20 Q. Oh, youth support?

21 A. Yes, in particular within sports psychology my  
22 focus has been on youth.

23 Q. Okay.

24 A. Not exclusively.

1 Q. So just to be clear, you are not an exercise  
2 physiologist, right?

3 A. I am not.

4 Q. And you are not a medical doctor.

5 Correct?

6 A. That's correct.

7 Q. And you don't have expertise in the science of  
8 performance advantage, do you?

9 A. No.

10 Q. And you have no expertise in sports safety. Is  
11 that true?

12 A. Yes, true.

13 Q. And do you have any expertise in concussion  
14 management?

15 A. No.

16 Q. Do you have any expertise in ACL injuries?

17 A. No.

18 Q. Have you done any research studies or papers  
19 regarding transgender females in sports?

20 A. No.

21 Q. Have you taught any classes on that?

22 A. Not like a complete course, but it's a topic  
23 that we can cover in our undergraduate score psychology  
24 class.

1 Q. And so is that a class that you teach?

2 A. Yes.

3 Q. And what exactly have you covered with regard to  
4 transgender females in that class?

5 A. So late this semester I'm teaching the class and  
6 later in April we have a trans --- a transfemale who is  
7 a retired athlete and coach coming in for that day and  
8 we will probably take a partial class before that just  
9 to have some discussions and lay some groundwork. It is  
10 an educational session where we just --- we have  
11 students who may be well informed and passionate about  
12 transathletes in sport and we have had other students  
13 who have had very little exposure. So it's not a big  
14 --- it's not a big chunk of the class, right, it's a  
15 class or two that we touch on it.

16 Q. Aside from any research, have you attended any  
17 seminars or classes on transgender females in sports?

18 A. Yes. Typically at our national conference, the  
19 Association of Applied Sports Psychology, you know,  
20 that's a jampacked schedule, and probably most  
21 conferences I'll sit in on a session. Sometimes they  
22 --- they will do a webinar, things like that. So over  
23 the years, yes, I have participated in those.

24 Q. Have you reviewed any literature on transgender

1 participation in sports to prepare your opinion in this  
2 case?

3 A. Like over the last two years I've read some. I  
4 couldn't point or identify, hey, this is exactly the  
5 literature I've read. Just someone who's reading often  
6 in my --- you know, within sports psychology.

7 Q. Your bibliography doesn't include any papers  
8 studying transgender athletes, does it?

9 A. No.

10 Q. And have you done any studies or papers  
11 regarding the harm to motivation on females when  
12 biological boys or trans/transgender girls are allowed  
13 to compete on girls teams?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: I have.

16 BY ATTORNEY TRYON:

17 Q. Do you mean have not?

18 A. I'm sorry, have not.

19 Q. Have you taught any classes on that topic?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: I have not.

22 BY ATTORNEY TRYON:

23 Q. Have you attended any seminars or classes on  
24 that topic?

1 ATTORNEY VEROFF: Objection.

2 THE WITNESS: I have not.

3 BY ATTORNEY TRYON:

4 Q. Have you prepared any papers regarding  
5 differences for motivation between males and females?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Yes.

8 BY ATTORNEY TRYON:

9 Q. Okay.

10 Well, what are those?

11 A. Okay.

12 I think in, oh, gosh --- in --- sometimes in  
13 papers we, you know, we see if there were gender  
14 differences in terms of motivation. When there are  
15 differences they're slight and we are back to that bell  
16 curve mean thing that there might be a slight difference  
17 but they don't impact the hypotheses in the sense that  
18 --- in the sense that someone has a high task  
19 orientation and/or perceives a task involving climate or  
20 caring climate, whether you are male or female those  
21 predictions hold up in terms of the outcomes.

22 Q. Are there papers in your bibliography that would  
23 show that to be the case that it's the same for boys and  
24 girls. Feel free to take a look at it. You have got it

1     there.

2                     VIDEOGRAPHER: I would note that we  
3     gained another participant. If they would identify  
4     themselves for the record.

5                     ATTORNEY PELET: Good morning. My name  
6     is Valeria Pelet del Toro for Cooley, LP, for Plaintiff  
7     BPJ.

8                     THE WITNESS: Thank you for that time.  
9     The Hogue, Fry and Fry 2017, I have to review that  
10    paper. I can't remember if there were any gender  
11    differences. These were Middle School kids who  
12    were ---.

13    BY ATTORNEY TRYON:

14       Q.     Let me stop you for just a second. Can you tell  
15    me what page that's on?

16       A.     Yes, page 14, the second from the last  
17    reference.

18       Q.     And which one is it again?

19       A.     The Hogue Fry and Fry, 2017.

20       Q.     Page 14 you said?

21       A.     Yes, page 14, the second reference from the  
22    bottom of the page.

23       Q.     I'm seeing Walling, M.D.

24       A.     Okay. Sorry.

1 Q. Maybe the pagination is different on your copy.

2 A. I'm sorry. Are you looking at the expert report  
3 and Declaration?

4 Q. Yes, I am.

5 A. Okay.

6 It should be the same. If you go in  
7 alphabetical order, Hogue with an H, H-O-G-U-E.

8 Q. Okay.

9 Here is the issue. I see. Hogue, et cetera.

10 A. Yes.

11 Q. There's two by Hogue. Which year? They're both  
12 2013.

13 A. The 2017.

14 Q. What is the title?

15 A. The title is the Differential Impact of  
16 Motivational Climate on Adolescents Psychological and  
17 Physiological Stress Responses.

18 ATTORNEY TRYON: It is on page three.  
19 Can you bring that up, Jake? It is under 14.

20 VIDEOGRAPHER: I was trying to look for  
21 it too.

22 ATTORNEY VEROFF: I think there is two  
23 page 14s. So there is a bibliography that directly  
24 follows the expert report and then there is the



1 citations that are encompassed in Exhibit A, the first  
2 page 14.

3 ATTORNEY TRYON: Thank you, Julie, for  
4 helping us out with that. I see it now. I'm sorry for  
5 that confusion.

6 BY ATTORNEY TRYON:

7 Q. You were going to explain that paper.

8 A. I'm sorry. Did you ask me to explain the paper?

9 Q. Yes. You were starting to talk about that, so I  
10 would appreciate if you could talk about that?

11 A. So in this study Middle School kids are  
12 recruited to participate in an intervention. They come  
13 in and they learn an activity. And they're assigned ---  
14 randomly assigned to either caring task involving  
15 climate or an ego involving climate. And as they  
16 participate across the interventions, their cortisol is  
17 measured. Cortisol is a stress hormone and it can  
18 indicate that people are experiencing higher stress.  
19 And so in this study we found that athletes in the  
20 caring task environment climate, their cortisol levels  
21 actually decreased, right, suggesting that they were not  
22 stressed. In addition they had more fun, they indicated  
23 they tried harder, they made more progress learning the  
24 activity, they experienced, you know, less shame, less

1   embarrassment, less anxiety. That is what I'm recalling  
2   from memory, okay. There are probably a couple of other  
3   things.

4                   And if they participated in an ego involving  
5   climate you got to flip all of those. They didn't have  
6   as much fun, didn't indicate that they wanted to  
7   continue with the activity and their cortisol levels  
8   were significantly higher than those in the other group.  
9   And the results were consistent for males and females.  
10   What I would have to go back and check is were there any  
11   --- going back to these slight mean differences, were  
12   there any differences between the males and females in  
13   the other variables. And that I couldn't tell you  
14   without reviewing it. But in general, the purpose of  
15   the study was to see how this environment affects kids  
16   and the results were similar for males and females.

17       Q.       And what age group was that?

18       A.       This was Middle School, so six, seven and eight  
19   graders. I think it leaned heavier on the six grade,  
20   seven grade participants, but the mean age was probably  
21   12.

22       Q.       Any other papers in your bibliography talking  
23   about whether or not there is a difference between males  
24   and females and how they are motivated, if there is any

1 difference between them that is?

2 A. Yeah. I think with any of these studies,  
3 honestly, I just have to go back and see if there were  
4 any minor little differences between gender, but across  
5 gender the results are consistent.

6 Q. Okay. All right.

7 Let me ask you, have you prepared any papers  
8 regarding motivations for biological boys identifying as  
9 girls?

10 A. I have not.

11 Q. Have you prepared any papers regarding  
12 transgender girls?

13 A. I have not.

14 Q. Have you studied that issue?

15 A. No.

16 Q. Would that be something worth studying?

17 A. It could --- I'm sorry. Could you repeat that?

18 Q. Motivation regarding transgender girls?

19 A. Yes, it could be valuable.

20 Q. As far as you know, has anyone studied that?

21 A. Yeah, I --- you know, I hear people saying, you  
22 know, that there is just going to be more and more  
23 research coming out. I think there is isolated papers  
24 out there probably that people have had a look at or ---

1 but I couldn't name them right now for you.

2 Q. Have you prepared any papers regarding coaching  
3 transgender girls versus biological girls?

4 A. I have not.

5 ATTORNEY VEROFF: Objection.

6 BY ATTORNEY TRYON:

7 Q. Are you aware of any studies that do address  
8 that?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: No.

11 BY ATTORNEY TRYON:

12 Q. Have you prepared any papers regarding the  
13 opportunity for collegiate athletic scholarships  
14 motivates student athletes?

15 A. Have I prepared any papers?

16 Q. That is my question.

17 A. No.

18 Q. Would you agree that the opportunity for  
19 collegiate athletic scholarships does, in fact, motivate  
20 the student athletes?

21 A. Some student athletes.

22 Q. Now, you qualify that as some. Any idea what  
23 that percentage might be?

24 A. No.

1 Q. Are you familiar with Title 9?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Yes, to some degree.

4 BY ATTORNEY TRYON:

5 Q. Tell me what your understanding of Title 9 is in  
6 the context of girls sports.

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: More opportunities are  
9 provided to girls to the same degree as boys and that  
10 fairness is given across other aspects of resources and  
11 so on, facilities and things like that.

12 BY ATTORNEY TRYON:

13 Q. Have you ever written any papers on Title 9?

14 A. No.

15 Q. Have you written any papers on college  
16 scholarships for girls?

17 A. On college scholarships for girls?

18 Q. Yes.

19 A. No.

20 Q. So you wouldn't be an expert on that, would you?

21 A. No.

22 Q. Have you submitted any comments to the  
23 Department of Education on proposed rules or regulations  
24 under Title 9?

1 A. No.

2 Q. Let me ask you a question a little bit different  
3 than the one earlier. Can the opportunity for  
4 scholarships for girls collegiate sports be a motivator  
5 for girls to compete in girls sports?

6 A. It can be for some athletes.

7 Q. So in paragraph 11 of your expert report, which  
8 is Exhibit-2, it says on the national level I've served  
9 with the Association of Applied Sports --- Sport  
10 Psychology, AASP, as a member of the Program Review  
11 Committee. That is correct, isn't it?

12 A. Yes.

13 Q. It's my understanding that the purpose of that  
14 organization is primarily to help train coaches.

15 Is that fair?

16 A. No, that would be not accurate.

17 Q. Tell me the purpose of it.

18 A. Okay.

19 It is an organization of professionals that work  
20 in the area of sport and exercise psychology and to say  
21 there's probably two aims, that these professionals are  
22 trying to help people, a wide variety of people across  
23 the lifespan reap off the benefits from participation in  
24 physical activity and also help people perform up to

1 their potential or help them perform better. It is a  
2 mix of the organization. There are people who are  
3 faculty members and people that are involved in the  
4 team, are involved in programs but there's also people  
5 that are trained on the clinical side or that are more  
6 focused on sort of counseling aspects of sports  
7 psychology.

8 Q. Are you actually a member of the organization?

9 A. Yes, I am.

10 Q. Now, on the website it said that there is 2900  
11 members in 50 countries. Is that about right to your  
12 knowledge?

13 A. That sounds right.

14 Q. So I divided that out. That would be 58 per  
15 country. That doesn't sound very big per country. So  
16 let me ask you, do you know how many of those are  
17 members are in the United States?

18 A. I don't know. I would guess it's heavily  
19 weighted in the U.S. I would say over half. I think  
20 there's a lot of countries that might have one person or  
21 so. So even though 50 countries are represented, you  
22 know, some of them are small and may have a really small  
23 participation, right.

24 Q. Okay. Fair enough.

1           So you mention in this paragraph the  
2           certification exam. So there is a certification exam.

3           Is that right?

4           A.       Yes. It's pretty new. There has been a  
5           certification. The fact that it is exam based is a new  
6           direction over the last few years.

7           Q.       What is the purpose or meaning of that  
8           certification?

9           A.       It's called CMPC, Certified Medical Performance  
10          Consultant, and it is good for the field because the  
11          people who have that credential, it designates sort of,  
12          you know, acceptable level of competence to go out and  
13          to work with athletes and coaches. So there is a number  
14          of courses people have to have. They have to have hours  
15          of training working directly with athletes. And then  
16          when they complete all those requirements they take ---  
17          they take an exam.

18          Q.       Have you taken the exam?

19          A.       I'm --- I'm about to in the coming months. A  
20          little back story on this is that the certification  
21          originally came out as I was wrapping up my doctoral  
22          training, and I would have needed to stay another year  
23          to get the other requirements that I was missing and my  
24          doctoral advisor at the time said, you know, yeah, I'd



1 just go and graduate and get rolling in your career.  
2 And she wasn't sure if this would take off or how big a  
3 deal it would be, and so over the years it has been sort  
4 of slow to take off. I have, for example, people come  
5 and say do you have this AASP Certification until the  
6 last year or two. So I think the public is becoming,  
7 you know, more aware of it.

8 I was asked to write the chapter in the  
9 Essentials Text, which is really the text for people to  
10 prepare for the exam. And so I was asked to write the  
11 motivation chapter, a key chapter on motivation  
12 theories. And so there's this double blind system on  
13 writing one of the chapters that I needed to wait longer  
14 to actually take the exam. But currently I'm an  
15 approved mentor to train students who are seeking the  
16 certification.

17 Q. But you don't have the certification at this  
18 point.

19 Correct?

20 A. Right. Just as a mentor. I have --- I received  
21 all the thumbs up on every --- on --- you know, you  
22 submit a packet of materials showing you have all the  
23 credentials and all. So I've done that. I just need  
24 now to sit for the exam. And I haven't done that yet.

1 I will probably do it once the semester is over.

2 Q. Do you consider yourself an athlete?

3 A. I'm smiling. I do.

4 Q. Okay.

5 A. I work closely with the Women's Inner Sport  
6 Network in Kansas City and they say that should be the  
7 mantra. Every female should say I'm an athlete. I'm  
8 not currently competing.

9 Q. Okay.

10 What sports have you participated in?

11 A. Tennis and softball were my primary sports.

12 Q. And when did you compete in or participate in  
13 those?

14 A. Softball was kind of a Middle School thing and I  
15 transitioned to tennis as I hit high school and competed  
16 through high school and college and then probably  
17 through my 20s still competing in tournaments around the  
18 state.

19 Q. So after college were you still competing in  
20 some fashion?

21 A. I was, yeah. Just one of the nice things about  
22 teaching and you have that summer break. And my friends  
23 enjoyed playing so we would play in tournaments around  
24 the state.

1 Q. Did you want to win?

2 A. I did.

3 Q. And so were you --- let's go back to the terms  
4 you already mentioned, like ego oriented and task  
5 oriented, right?

6 A. Uh-huh (yes), yes.

7 Q. And so tell me just in layman's terms what those  
8 mean.

9 A. Okay.

10 They were developed in a theory by a guy named  
11 John Nicholls and he said --- what he was really --- the  
12 question he was trying to address is what should we be  
13 doing if we are trying to help every athlete reach their  
14 own potential. And so his theory it has three facets to  
15 it. One is the goal orientation and those refer to your  
16 personal definition of success. And so some people ---  
17 he identified two, task orientation and ego. And people  
18 who have a high task orientation, they really feel most  
19 successful when they can walk away knowing they gave  
20 their best effort and they're focused on their  
21 improvement over time. But that is where genuine  
22 feelings of success come.

23 In contrast, some people have a strong ego  
24 orientation and they're more focused on how they compare

1 to everyone or are they winning. And they may say,  
2 yeah, good for me, I tried hard, who cares. What I care  
3 about is how did I compare to everyone. Did I  
4 demonstrate confidence? Did I look better than others,  
5 did I win?

6 Q. And can somebody have both an ego orientation  
7 and a task orientation?

8 A. Yes. They can be high in both, high in one and  
9 low in another.

10 Q. And when you were playing tennis, were you ---  
11 which one were you? Ego oriented or task oriented?

12 A. I think I've always had a high task orientation.  
13 I just loved sport and the chance to complete, and I  
14 would say I had a moderate ego orientation.

15 Q. Is one better than the other?

16 A. It depends what your aim is. If we want  
17 athletes to have fun and to keep playing and to try hard  
18 to have good relationships with others and to be good  
19 sports, then we should try to promote task orientation  
20 because ego orientation is not related to those things  
21 pretty consistently.

22 Q. And under your theory then should we try to  
23 suppress ego orientation?

24 A. No. I think the second part of the theory is

1     what kind of environment we create for our athletes, and  
2     so the research is very strong in this area suggesting  
3     many benefits when we can create a task and a caring  
4     climate for athletes. So the problem with the climate  
5     for a coach is that you really need to pick what am I  
6     going to do because you can't do both or it becomes a  
7     wash or a neutral environment. So those features of  
8     each of the climates, they're really in direct contrast  
9     with one another.

10       Q.     When you say you are an athlete, what does that  
11     mean to be an athlete?

12       A.     You know, for me it means someone who just loves  
13     having the opportunity to do their best and to try and  
14     improve and to walk away on one --- you know, today I'm  
15     going to go out there, I'm going to give my best and  
16     tomorrow I'm going to get up and go do it again whatever  
17     happened, right, because there is just so much fun and  
18     joy that comes from having that opportunity.

19       Q.     So just as I recall you said you do like to win,  
20     right?

21       A.     I do.

22       Q.     And you can like to win and want to win whether  
23     you are personally ego oriented or task oriented, right?

24       A.     Absolutely. I mean, who plays sports and

1 doesn't want to win. I mean, that's just sort of a  
2 given. What does winning mean for us, right? Is it a  
3 chance for me to kind of put my chest out and say I'm  
4 better than you, I beat you, or is it kind of a  
5 celebration of me being able to say, boy, I've worked  
6 hard and I can see I'm improving, right.

7 Q. Right. But if you are in an environment where  
8 you basically are prevented from winning, that would be  
9 very discouraging.

10 Right?

11 A. I'm not aware of any of those environments where  
12 you are prevented from winning.

13 Q. Well, what if the coach doesn't let you play?

14 A. Does that mean like you're not a starter or ---  
15 is that what you're referring to?

16 Q. Well, if you are just a bench warmer, would that  
17 be discouraging to some people?

18 A. You know, this comes back to the climate. If a  
19 coach is saying you're an important part of this team  
20 which is one of the features of a task and caring  
21 climate, right, you're valuable, you push everybody,  
22 your opportunities are going to be coming. And what  
23 it's really about is let's do all we can to help you  
24 keep developing, right. If we are just like, hey,

1 please stay out of the way, go sit at the end of the  
2 bench, go down to the end of the court because I'm  
3 working with these few star athletes I've got here, then  
4 yeah, it would be discouraging.

5 Q. Would you agree that rules are important in  
6 sports?

7 A. Yes.

8 Q. So you mentioned you have played tennis and  
9 softball. And what other sports are you familiar with?

10 A. Played a little bit of volleyball going through  
11 --- yeah, you know, I grew up in Texas and tennis is  
12 just a year-round sport, right.

13 Q. Right.

14 A. So that is a lot of my experience. My son is a  
15 baseball player, so I've watched an awful lot of  
16 baseball as well.

17 Q. Are you familiar with track and cross-country  
18 even though you haven't done it?

19 A. Yeah, yes.

20 Q. Are you familiar with football?

21 A. Yes.

22 Q. So how about basketball?

23 A. Yes.

24 Q. Who is going to go on in the final four?

1 A. Absolutely. A little excitement here in town.

2 Q. Yes. So do sports have to be athletic to be  
3 sports?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: Do they have to be  
6 athletic?

7 BY ATTORNEY TRYON:

8 Q. That is my question.

9 A. Okay.

10 I think it just depends on how you define  
11 athletic.

12 Q. Well that's what I'm wondering. So for example,  
13 are video games sports?

14 A. You know, some universities are considering  
15 those. They have sports teams and they are considering  
16 that part of the athletics. It's not my particular area  
17 of interest.

18 Q. Okay.

19 So some sports are solo and some are with  
20 teams.

21 Is that a fair statement?

22 A. Yes and no. Again, I would say it is how you  
23 define it, right. If you are going to say a track team  
24 with the best individual, I would say there is relays



1 and it depends how the coach approaches it. Are we just  
2 a lot of individuals doing our thing out here, are we a  
3 team working together?

4 Q. Well, when you --- so that may be in high school  
5 there is teams. But outside of high school or college  
6 there are sports you participate in that, for example, a  
7 marathon, you could be on a marathon and simply you're  
8 participating as an individual, right?

9 A. Uh-huh (yes), I agree.

10 Q. And but --- so some athletic events can be done  
11 without being on a team. Are there others that you can  
12 think of besides marathons?

13 A. Sure. As people graduate and they can run  
14 races, yeah, they can participate in weightlifting.

15 Q. And a lot of these things ---?

16 A. They could have ---.

17 Q. Sorry to interrupt you. Go ahead.

18 A. I'm sorry. They could swim. I'm just throwing  
19 out another one.

20 Q. Yeah. So swimming is both --- you do it as a  
21 sole --- as an individual but also as part of a team in  
22 high school and college, right?

23 A. Right.

24 Q. And both cases you, as an individual, want to

1 win in these sports but also you're trying to help your  
2 team win. Is that a fair statement?

3 A. Yes, at its best.

4 Q. And there is sometimes when you feel like  
5 running, it can be something you just like to run. You  
6 don't have to be on a team or you can compete, you just  
7 run on your own, right?

8 A. That's true.

9 Q. I see little kids, why walk when you can run.  
10 So that's something that you can do alone or you can do  
11 with your family, right?

12 A. Uh-huh (yes).

13 Q. Is that a yes?

14 A. Yes, sorry.

15 Q. Thanks. And it's something you can do either  
16 competitively or not competitively, right?

17 A. Yes,

18 Q. Now when you're on a team, for example, a track  
19 team, you're competing against other people on your  
20 team.

21 Is that right?

22 A. Again, I would just say --- I would just check  
23 --- that is not how I would phrase it if I were a coach,  
24 that we're competing against each other. I would say we

1 are a team and we are working together to bring out the  
2 best in each one of us, but the goal is every athlete  
3 reach their potential.

4 Q. But every one of those kids on a track team  
5 still wants to be the best on the track team as a  
6 general rule, right?

7 A. I don't know that that is necessarily true, but  
8 I think they want to compete and they want to do well.  
9 I would agree with that.

10 Q. I probably overstated that, but many of them ---  
11 at least some of them want to be the best on the team,  
12 the fastest on the team, right?

13 A. Yes.

14 Q. So those are the people that are comparing  
15 themselves to others and just want to be --- so they  
16 would be ego centered, ego oriented.

17 Is that right? But not necessarily?

18 A. Yeah, not necessarily.

19 Q. Okay.

20 A. Do you want me to comment on it?

21 Q. Sure.

22 A. Okay.

23 If I could just use an example. Like a track  
24 athlete, Al Oerter was an athlete in the '50s and '60s,

1 he won four gold medals consecutively across four  
2 Olympics, it's crazy, throwing the discus. And he said  
3 --- a reporter asked him how did you beat the world, how  
4 were you so great, how were you better than everybody  
5 else these four Olympics, and he said --- his response  
6 was like that's nonsense. It is never about being  
7 better than somebody else. It's about being the best  
8 that you can be, right. And so what if is just good  
9 enough. What if I beat you, good, but maybe I can be so  
10 much better than that. So for my sights to be set on  
11 just being better than you it is limiting, right. And  
12 if you are so much better than me and so much less  
13 talented, why don't I just focus every day on being the  
14 best that I can be, right. So Al Oreter, you think four  
15 time Olympic gold medalist, he's got to be high on ego  
16 orientation. He's somebody who's really high in task  
17 and would have been lower. But we could look at other  
18 athletes that would be the flip and definitely. So when  
19 you say athletes who want to win that doesn't  
20 distinguish the task and ego aspect of it.

21 Q. So task and ego orientation doesn't affect  
22 somebody's desire to win. Desire to win is separate  
23 from the ego versus task orientation, that's what you're  
24 saying, right?

1       A.       I think it comes down more to what does winning  
2 mean.

3       Q.       All sports have rules, we've established that,  
4 right?

5       A.       Uh-huh (yes).

6       Q.       Is that a yes?

7       A.       Yes.

8       Q.       The purposes of the rules is, one, tells you how  
9 to play the game, right?

10      A.       Yes.

11      Q.       Another is for safety. You have rules for  
12 safety, is that right?

13      A.       Yes.

14      Q.       And you have rules to make things fair, right?

15      A.       Yes.

16      Q.       What other reasons do we have rules in sports?  
17 Does that cover it?

18      A.       Nothing else comes to mind right now.

19      Q.       Who generally makes rules for sports?

20      A.       The leagues and sports organizations per se.

21      Q.       Would it be fair to say that the participants  
22 rely on the rules?

23      A.       Rely on the rules?

24      Q.       Yes.

1       A.       Fair to say that participants when they join a  
2 league or, you know, their understanding that there are  
3 rules that they need to abide by.

4       Q.       And they expect that others have to abide by  
5 those same rules; right?

6       A.       Yes.

7       Q.       And it is important to have consistent rules,  
8 rules that don't change periodically, right?

9       A.       I think rules change all the time in sports.

10      Q.       Why do they change?

11      A.       I think they change because they are recognizing  
12 those things that you mentioned that maybe something  
13 would be safer or something would be more fair or more  
14 inclusive.

15      Q.       And sometimes those changes are made in  
16 anticipation of problems, not waiting for problems to  
17 happen.

18               Is that fair?

19               ATTORNEY VEROFF: Objection.

20               THE WITNESS: Yeah, I'm not sure.

21      BY ATTORNEY TRYON:

22      Q.       Okay.

23               What about safety, rules for safety, do  
24 sometimes safety rules anticipate problems and sometimes

1 they react to problems that have already occurred?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Yes.

4 BY ATTORNEY TRYON:

5 Q. Is that a yes?

6 A. Yes.

7 Q. And then how about fairness, we have rules  
8 designed for fairness and those are sometimes set in  
9 motion because of something that has happened, right?

10 A. Uh-huh (yes).

11 Q. Yes?

12 A. Yes.

13 Q. And other times it's in anticipation of problems  
14 that we see might come down the road but we want to set  
15 rules for fairness, right?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: Yes.

18 BY ATTORNEY TRYON:

19 Q. And in all sports there is scoring, right?

20 A. Yes.

21 Q. That is part of the rules, right?

22 A. Uh-huh (yes), yes.

23 Q. And those scores decide who wins, right?

24 A. Yes.

1 Q. Would you say scoring is a motivator?

2 A. For some athletes.

3 Q. When an athlete perceives something as being  
4 unfair, that's a de-motivator, would you agree?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: In some cases.

7 BY ATTORNEY TRYON:

8 Q. So sports also have rankings, individual  
9 rankings and team rankings, right?

10 A. That's right.

11 Q. And for some athletes those rankings are  
12 motivators, right?

13 A. Yes, for some.

14 Q. And sports, you give out trophies for winners,  
15 right?

16 A. I'm sorry. You broke up.

17 Q. In sports we give out --- at least in some cases  
18 we give out trophies to winners, right?

19 A. In some cases.

20 Q. So let me see if I understand. Are you  
21 advocating that sports should eliminate scoring?

22 ATTORNEY VEROFF: Objection.

23 THE WITNESS: No.

24 BY ATTORNEY TRYON:



1 Q. Are you advocating that they should eliminate  
2 rankings?

3 A. I don't think it would hurt at lower levels. I  
4 don't think we need to have have a focus on that when  
5 you're five or six years old, on rankings, and we ought  
6 to be focused just on learning the game and having fun,  
7 but in general I'm not opposed to us having ---  
8 identifying winners and ranking teams and so on.

9 Q. And sports teams, the coaches decide who plays  
10 in different positions in different games.

11 Is that right?

12 A. That's right.

13 Q. And should how good the student athlete is have  
14 anything to do with when, where and how to play  
15 according to the coach?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: Should the athlete's talent  
18 have something to do with how much playing time they  
19 get?

20 BY ATTORNEY TRYON:

21 Q. That would be a fair way to characterize my  
22 question, yes. What is your answer?

23 A. I would agree with that particularly as we move  
24 up in levels. I really like the rules that some youth

1 sport leagues have that we have eight-year-olds and  
2 we're not just going to say, hey, Julie, you're on the  
3 bench because you're not as good so you don't get any  
4 playing time. I like the rules that say everybody gets  
5 in there a few innings and gets some playing time or  
6 gets to bat, or whatever the sport might be. So I think  
7 it really varies on what sport we are talking about.

8 Q. Let's look back at your report, Exhibit-2. Look  
9 at paragraph 35. Do you see that?

10 A. Yes, I do.

11 Q. The first sentence says, thus the benefits  
12 associated with youth and young adult sport are not  
13 limited to whether athletes are winning competitions,  
14 where they are ranked in their sport or what level of  
15 publicity they are getting.

16 Do you see that?

17 A. Yes.

18 Q. So you would agree with me that one of the  
19 benefits is the opportunity to win competitions.

20 Right?

21 A. I would probably word it one of the benefits is  
22 the opportunity to compete.

23 Q. Well, here you say winning. You say it is not  
24 limited to whether athletes are winning, which suggests

1 that winning competitions is one of the benefits.

2 Correct?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: Yeah. I think what I mean  
5 by that is if only --- if you have to win to have a  
6 great experience in sports, then half of our teams are  
7 not going to have a good experience, right. So what I'm  
8 suggesting here is that and as the data backs this up  
9 that if you are in a good climate, then you can go out  
10 there and have fun and try hard and maybe your team  
11 didn't end up with a winning record, but you can still  
12 reap the benefits. And so it is not the case that only  
13 winning teams reap these benefits that come along with  
14 sports.

15 BY ATTORNEY TRYON:

16 Q. So you are saying winning is not a benefit?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I'm going to say winning  
19 can be a benefit. It's not a primary one in my mind in  
20 sport, but yes, winning can help us see our improvement  
21 and, you know, winning has its place for sure.

22 BY ATTORNEY TRYON:

23 Q. And you see athletes when they win, they are  
24 pretty excited, aren't they?

1 A. Many of them are.

2 Q. Well, have you ever seen anybody disappointed  
3 about winning?

4 A. Maybe not disappointed, but if --- let's just  
5 say you are really skilled in tennis and you come and  
6 you know, you leave me behind, you beat me 6061, there  
7 might not be a lot of joy for you in beating me, right,  
8 but for some athletes it might be, hey, it's another win  
9 for me and I'm super excited about that. So that is  
10 what I mean.

11 Q. And where they're ranked in their sport, that is  
12 one of the benefits.

13 Right?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: Yeah, I think we may have a  
16 different view on benefits. With benefits I'm just  
17 thinking what's going to help us long term. And it  
18 reminds me of this Olympic gold medalist who said her  
19 kid was going through kind of a junk drawer and found  
20 her gold medal, right. So winning --- she's a gold  
21 medalist, didn't mean as much as all the experience and  
22 just reflecting on the ability to give your best effort  
23 and to build these relationships and to push yourself so  
24 hard. Those seem like benefits more than, you know, the

1 trophy or something winning. I'm not disputing that  
2 winning, yeah, can be fun and it is definitely part of  
3 sport.

4 BY ATTORNEY TRYON:

5 Q. Yeah. And so all those things you just  
6 mentioned certainly are benefits to sports. I'm not  
7 trying to suggest that's not the case. I just want to  
8 understand when you say in this paragraph, thus benefits  
9 associated with youth and young adult sports are not  
10 limited to whether athletes are winning competitions,  
11 where they are ranked in their sport or what level of  
12 publicity they are getting, it's not limited to that,  
13 but it does include those three things, right?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: I'm going to give you that  
16 those are benefits. I'm just going to put them down  
17 lower on what we value.

18 BY ATTORNEY TRYON:

19 Q. Okay.

20 A. Or more important benefits.

21 Q. Is the opportunity to get a college scholarship  
22 also a benefit in youth sports?

23 A. For a very small proportion of children in youth  
24 --- in our youth sport world are able to secure college

1 scholarships and go on, and so our youth sport world  
2 shouldn't be centered around that I believe.

3 Q. But for those that want to and can get college  
4 scholarships, that is a big benefit for them, right?

5 A. Yes, that's very cool.

6 Q. And it can be worth tens of thousands of  
7 dollars, right?

8 A. Yes, it can.

9 Q. And even just being recruited to play on a  
10 college team, that's a big benefit for high schoolers,  
11 right?

12 A. Yes, for some.

13 Q. Well, right, for some. And in order to get  
14 there you need to be able to --- have the opportunity to  
15 --- well, strike that.

16 And for obviously a smaller minority still the  
17 opportunity to ultimately go on and play professional  
18 sports, that is another benefit, right?

19 A. Yeah, it's a benefit for such a small proportion  
20 that, again, I would just say that's not how we should  
21 set up our sports world, for those few.

22 Q. I understand that, but nonetheless there are  
23 many who never get to that place, but that's what they  
24 strive for and that's one of the reasons why they are in

1 sports, right?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: I think there could be  
4 people like that for sure.

5 BY ATTORNEY TRYON:

6 Q. And same thing with scholarships, there are a  
7 lot of kids that want to get scholarships, they may not  
8 get them, but they're in sports because they want to get  
9 that scholarship and they think they'll be able to.  
10 Fair statement?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: Yeah, I'm not sure what the  
13 percentages are. There are probably a lot more who  
14 would like to have a college scholarship who don't  
15 receive them because of the small proportion who do,  
16 right. But definitely. That's called extrinsic  
17 motivation. If I'm just playing a sport because that's  
18 the --- that's what I'm going for is a scholarship,  
19 yeah, there could definitely be athletes focused along  
20 those lines.

21 BY ATTORNEY TRYON:

22 Q. And would you agree that colleges generally  
23 select scholarship athletes from the pool of people that  
24 are actually playing high school athletics? That is a

1 correct statement, right?

2 A. I would say the majority have played high school  
3 athletics, yes.

4 Q. And those that are seeking that scholarship are  
5 athletes who use their high school performance to  
6 compete for college scholarships, right?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Yes, probably many do.

9 BY ATTORNEY TRYON:

10 Q. And the market for athletic scholarships is, in  
11 fact, competitive, right?

12 A. Many schools it is. Definitely not all schools,  
13 though.

14 Q. Okay.

15 What would it be otherwise?

16 A. I think some of the --- some smaller schools  
17 just will --- we have a local college that will give  
18 students like \$8,000 or \$10,000 a year towards their  
19 tuition fees if they participate on a sport team. And  
20 of course, you know, there has to be some level of skill  
21 there, but I wouldn't --- it is a good place for people  
22 who want to continue to play a sport but may not have  
23 the highest skill levels and definitely aren't being  
24 recruited at the division --- for the most part, a



1 Division I level or something like that.

2 Q. But they still compete for that scholarship,  
3 fair enough?

4 A. Yes.

5 ATTORNEY VEROFF: We've been going for a  
6 little over an hour. I just wanted to check in see,  
7 David, if you have a sense of when you are wrapping up  
8 this module. Maybe it would be a good time to take a  
9 break.

10 ATTORNEY TRYON: Yes, give me another  
11 five minutes and we can break if anybody wants to.

12 ATTORNEY VEROFF: Great.

13 ATTORNEY TRYON: Well, we can break right  
14 now. I'll leave it up to the witness. I'm not going to  
15 force it upon the witness or Plaintiff's Counsel. Would  
16 you like a short break?

17 THE WITNESS: That would be great. Thank  
18 you.

19 ATTORNEY TRYON: Let's go back how about  
20 20 till. Does that work?

21 VIDEOGRAPHER: Going off the record. The  
22 current time reads 12:32:00 p.m. Eastern Standard Time.  
23 OFF VIDEOTAPE

24 ---

1 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

2 ---

3 ON VIDEOTAPE

4 VIDEOGRAPHER: We are back on the record.

5 The current time reads 12:41 Eastern Standard Time.

6 BY ATTORNEY TRYON:

7 Q. So let me then ask you, Professor Fry, have you  
8 heard of the International View for Sociology of Sport?

9 A. That journal?

10 Q. Yes.

11 A. Yes, I've heard of it.

12 Q. Okay.

13 Are you familiar with Warren Whisenant?

14 A. No.

15 Q. Okay.

16 How about Jeremy S. Jordan?

17 A. No.

18 Q. Okay. Fair enough. Let me show you Exhibit ---  
19 if we could mark this, I guess we're at Exhibit 6,  
20 Fairness and Enjoyment in School Sponsored Youth Sports.  
21 If you could bring that up, Jacob.

22 ---

23 (Whereupon, Exhibit 6, Fairness and  
24 Enjoyment in School Sponsored Youth

1 Sports, was marked for identification.)

2 ---

3 ATTORNEY TRYON: Jacob, if you could just  
4 put --- I think we've done this before. Put this in a  
5 PDF in the chat box, can you do that?

6 VIDEOGRAPHER: Yes, I just have to do  
7 that while it is not being shared and then I can share  
8 it again.

9 ATTORNEY TRYON: Okay.

10 Well I think we can just share it for now  
11 and then we can put it in there. If not, then if we  
12 need to, we can do it.

13 VIDEOGRAPHER: Okay.

14 I mean, I already have it dragged in.

15 ATTORNEY TRYON: Great. It doesn't take  
16 long at all. Great.

17 BY ATTORNEY TRYON:

18 Q. So have you ever seen this article before?

19 A. I haven't. Can you enlarge it a little bit?  
20 And what year was this at the top?

21 Q. It looks like 2008.

22 A. Thank you.

23 ATTORNEY VEROFF: If you give the witness  
24 a minute if she wants to scroll and get a sense of what

1 this is.

2 BY ATTORNEY TRYON:

3 Q. Well, before I ask you any questions about this  
4 let me just ask you some questions overall. Would you  
5 agree that fairness in sports is an important value?

6 A. Yes.

7 ATTORNEY VEROFF: Objection.

8 BY ATTORNEY TRYON:

9 Q. And have you done any research on the issue of  
10 fairness and sports?

11 A. No. I'm just hesitating because we have  
12 included measures of sportspersonship, being a good  
13 sport. So if you include that then, yes. But in  
14 general, just fairness, I would say no.

15 Q. Okay.

16 Have you read any papers that specifically  
17 focus on fairness in sports?

18 A. You know, probably, but I couldn't name them.

19 Q. Okay.

20 Let's go down to --- I really only have one  
21 question here, which we'll look at and then if you want  
22 to review more of the article you are certainly welcome  
23 to do that. But if you go to what is labeled as page 97  
24 at the top.

1           A.       Could I just read the abstract first? Do you  
2 mind?

3           Q.       Yes.

4                    VIDEOGRAPHER: If you need that made  
5 bigger, let me know.

6                    THE WITNESS: Maybe one more notch up.  
7 Thank you.

8                    VIDEOGRAPHER: You're welcome.

9                    THE WITNESS: Okay.

10          BY ATTORNEY TRYON:

11           Q.       If you turn to 97, and the third full paragraph  
12 on that page it says an organizational climate embracing  
13 fairness is a critical factor influencing student  
14 athletes' attitude towards the sport they participate in  
15 and their desire to continue participation. Do you  
16 agree with that statement?

17                    ATTORNEY VEROFF: I will just remind the  
18 witness if she would find it helpful to read more  
19 context around that statement before you answer, you're  
20 welcome to do so.

21                    THE WITNESS: Yes, I think it would be  
22 helpful to look at how they measure fairness and, you  
23 know, the methods used in the study, but in general I  
24 can imagine that, yeah, that this is true.

1 BY ATTORNEY TRYON:

2 Q. Okay.

3 You don't --- just as a general statement you  
4 don't disagree with it?

5 A. Right.

6 Q. So I'm not going to ask you about any of their  
7 results or anything else, I just wanted to get your  
8 reaction on that statement. And you are not offering  
9 any expert opinion on fairness in sports.

10 Right?

11 A. That's right.

12 Q. Are you offering an expert opinion on whether or  
13 not HB-3293 is fair?

14 A. I'm --- I believe that the sport organizations  
15 at every level really value being inclusive and it would  
16 be harmful to exclude athletes where they wouldn't have  
17 an opportunity to reap the benefits of sport.

18 Q. And there are a lot of things that go into  
19 fairness, right?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: Yes.

22 BY ATTORNEY TRYON:

23 Q. And it requires balancing of interests of  
24 various people and groups and values; right?

1 ATTORNEY VEROFF: Objection.

2 THE WITNESS: Yes.

3 BY ATTORNEY TRYON:

4 Q. You have not attempted to do that balancing in  
5 connection with HB-3293, have you?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Yeah, I think my expertise  
8 is to weigh in on all the benefits that athletes would  
9 not have an opportunity to reap if they weren't able to  
10 participate. But I think there are people who know a  
11 whole lot more more with any sport about how to keep  
12 making the rules fair for everyone.

13 BY ATTORNEY TRYON:

14 Q. Okay.

15 But just to be clear you have not attempted to  
16 do that balancing with HB-3293?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I'm not sure I understand  
19 the question.

20 BY ATTORNEY TRYON:

21 Q. Okay.

22 Let me try again. We established that fairness  
23 depends on balancing a lot of interests and views of  
24 different groups, different people, right?

1           A.       Yes.

2                    ATTORNEY VEROFF:   Objection.

3   BY ATTORNEY TRYON:

4           Q.       And that balancing, you have not attempted to do  
5 with respect to 32 --- HB-3293.

6                    Correct?

7                    ATTORNEY VEROFF:   Objection.

8                    THE WITNESS:   I think it would be unfair  
9 to categorically exclude a group of athletes from having  
10 the opportunity to participate.   So I'm not sure if that  
11 --- if you interpret that as balancing or not balancing.

12   BY ATTORNEY TRYON:

13           Q.       Have you balanced the interests --- have you  
14 looked at the interests of other people in that decision  
15 that went into 32, HB-3293?

16                    ATTORNEY VEROFF:   Objection.

17                    THE WITNESS:   Yes, I think this House  
18 Bill is not fair to transfemale athletes.

19   BY ATTORNEY TRYON:

20           Q.       Okay.

21                    We will move onto that in little bit then.  
22 What is your qualifications to determine fairness?

23                    ATTORNEY VEROFF:   Objection.

24                    THE WITNESS:   I think I was called to be



1 an expert witness in this case to speak to the many  
2 benefits that come from participating in sports. And so  
3 from my experience as an athlete and a coach and a  
4 scholar in this area I think I have, you know, insight  
5 and can speak to the many benefits and how we should do  
6 all we can to prevent --- or all we can to not exclude  
7 athletes from having the opportunity to participate.

8 BY ATTORNEY TRYON:

9 Q. You said you are a tennis player, right?

10 A. Yes.

11 Q. When is the last time you played tennis?

12 A. I --- there's a wall right outside my office,  
13 and so I hit on a backboard. I haven't played a match  
14 in a little while. I'm not sure the last time was.

15 Q. And when you played --- the most recent time you  
16 played competitively, was that in a league or how does  
17 that work?

18 A. I haven't played leagues in a while. It was  
19 just for fun. I'd play with a couple of my friends,  
20 when we go to conferences, we bring our racquets and we  
21 get together and play. I've moved into, you know, other  
22 exercise forms now and I swim and hike and so on.

23 Q. And so when you were playing tennis, team, is  
24 that what it was, on a team?

1 A. Uh-huh (yes), yes.

2 Q. What team was that?

3 A. I played USTA leagues. Those are for adults.  
4 And after college, you know, there is just like a  
5 circuit in Texas that you can sign up for tournaments  
6 all around the State and play and go for ranking.

7 Q. But in college you played, right?

8 A. Yes.

9 Q. And was that on a girls team or a mixed team or  
10 what? I don't know much about tennis so I'm just trying  
11 to understand that.

12 A. Okay.

13 There was a men's and women's team. We had a  
14 head coach for both and assistant. Maybe in the last  
15 year there were separate head coaches, but we worked out  
16 together. We traveled to tournaments together. When  
17 you add up the score you got to --- you got to --- the  
18 women had a score and the men had a score, so it wasn't  
19 a total team win like that.

20 Q. Okay.

21 So if you're on the women's team and you go up  
22 against some other team and they just said we're going  
23 to have boys, we're going to have men participate in the  
24 women's team against you, you wouldn't have thought that

1 was fair, right?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Well, I'm assuming you mean  
4 transfemales playing and ---?

5 BY ATTORNEY TRYON:

6 Q. I do not mean that. I meant exactly what I  
7 said. If you go to compete against another team and  
8 that team says we have two men, biological men, and they  
9 are going to compete against you, you would have said  
10 that is not fair, right?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I would have said --- sorry.

13 ATTORNEY VEROFF: That is all right.

14 THE WITNESS: I think I would have said  
15 what are the rules, right. And if the rules are that  
16 somebody could play, then I would say bring them on,  
17 right. And if the rules are that they can't play, then  
18 I'd say, yeah, we probably shouldn't do it that way  
19 until the rules change, right.

20 BY ATTORNEY TRYON:

21 Q. So whatever the rules are by definition are  
22 fair, right?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: No, I didn't say that. I'm

1     sorry, Julie.

2                     ATTORNEY VEROFF: No, that's quite all  
3     right.

4                     THE WITNESS: I didn't say the rules are  
5     always fair, but I think we have to start somewhere and  
6     we have to acknowledge them and respect them.

7     BY ATTORNEY TRYON:

8         Q.     Well, if they said we are going to have these  
9     men compete against you and they just changed the rules  
10    on you, wouldn't you object to the rules being changed?

11                    ATTORNEY VEROFF: Objection.

12                    THE WITNESS: Yeah. You know, in the  
13    context of what is taking place that seems not like a  
14    very realistic example in my mind. So I'm not sure I'm  
15    thinking about it.

16     BY ATTORNEY TRYON:

17         Q.     So you don't want to answer my question?

18                    ATTORNEY VEROFF: Objection.

19                    THE WITNESS: Yeah, I think it's --- I  
20    think what we are talking about is just more  
21    complicated, right, and it is not just --- if we are  
22    talking about transfemale athletes, I think we are  
23    talking about a different ball game than you are.

24     BY ATTORNEY TRYON:

1 Q. Yeah. Well, I was not talking about them, at  
2 least not yet. I'm just asking if suddenly men are  
3 allowed to compete against women in tennis, whether or  
4 not they identify as female, do you think that would be  
5 fair to the women?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Again, I would just go back  
8 to the rules. But just in general, that if I decide  
9 today, hey, I will go --- we have a really weak men's  
10 tennis team, so today I think I'll go play on the males  
11 tennis team, yeah, I don't think that would be right,  
12 right, that I could switchover to win. Right. The  
13 point is can people be their genuine, authenticate self  
14 and play with a gender identity that they have.

15 BY ATTORNEY TRYON:

16 Q. So I mean you're answering your own question  
17 your own way, but so that's fine, but you have also said  
18 that you think HB-3293, which sets a rule, you think  
19 that rule is unfair, right?

20 A. Yes, I do.

21 ATTORNEY VEROFF: Objection.

22 BY ATTORNEY TRYON:

23 Q. But the legislature balanced a lot of different  
24 interests in making that rule, right?

1                   ATTORNEY VEROFF: Objection.

2                   THE WITNESS: I don't know. I don't know  
3 that that is true.

4 BY ATTORNEY TRYON:

5           Q.       You don't know one way or the other what  
6 interests they balanced, right?

7           A.       I don't know what their ---.

8                   ATTORNEY VEROFF: Objection.

9                   THE WITNESS: --- I don't know what their  
10 knowledge base is or their real involvement. I don't  
11 know if they've taken a close look. It looks like in  
12 this situation, that PBJ (sic), that people close to it  
13 are saying, hey, let's let this child play, right, and,  
14 you know, the world is not going to end and kids can  
15 have good experiences and we can --- we can go. So  
16 yeah, I can't speak to what the legislators have --- the  
17 background they've done or their mindset.

18 BY ATTORNEY TRYON:

19           Q.       Do you think that the legislation, this  
20 legislation should be tailored to each individual?

21                   ATTORNEY VEROFF: Objection.

22                   THE WITNESS: No, no. I think the sport  
23 organizations at every level, from the Olympic Committee  
24 to the NCAA, all of them are saying we really value

1 being inclusive and let's do all we can to, you know,  
2 balance these things and make things fair but also being  
3 inclusive and not totally excluding a group of athletes.

4 BY ATTORNEY TRYON:

5 Q. So what would be the rule that you would set up  
6 for high school for transgender people --- let me  
7 rephrase that. What would be the rule that you would  
8 set up in high school sports for a male who expresses  
9 that he is now identifying as female should be allowed  
10 to participate in girls sports?

11 ATTORNEY VEROFF: Objection. Go ahead.

12 THE WITNESS: Yeah, I think we should  
13 rely on the experts and the medical doctors and the  
14 exercise physiologists who really study this and can  
15 say, hey, across these sports this is --- seems to  
16 create a fair playing ground. I think, you know, it  
17 sounds like our local weatherman, we have incoming data,  
18 right, but this is relatively new in the sport world and  
19 I think all of these researchers are gathering more data  
20 all the time that is going to help inform these  
21 decisions moving forward on how we create it. So you  
22 know, I'm not an expert to say, hey, what would those  
23 exact guidelines be, but just to have a blanket  
24 exclusion of all we set the stakes to do a lot of harm,

1 and BPJ would be a recipient of that harm in my opinion.

2 BY ATTORNEY TRYON:

3 Q. So we should rely on experts about safety for  
4 one thing, right?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: Yes.

7 BY ATTORNEY TRYON:

8 Q. And we should also rely upon experts in  
9 performance, right?

10 ATTORNEY VEROFF: Objection.

11 THE WITNESS: Yes.

12 BY ATTORNEY TRYON:

13 Q. So you keep focusing on BPJ, so if we are going  
14 to focus on each individual, we have to have in each  
15 sport an example of someone who is a male identifying as  
16 a female has to be individually evaluated to determine  
17 whether that person should be allowed to participate in  
18 whatever sport that person wants to be in?

19 ATTORNEY VEROFF: Objection.

20 THE WITNESS: No, I didn't say that. And  
21 it may be just we could have general guidelines at the  
22 high school level. I'm just saying I'm not --- that is  
23 not my expertise as on the performance and exercise  
24 physiology of it all to think what would be fair. I



1 think as we branch up and get to more elite levels, then  
2 that seems to be the direction that NCAA is going, that,  
3 hey, let's pull in these national governing bodies  
4 across the sport because they know the sport the best  
5 and are in the best position to maybe offer those  
6 guidelines.

7 BY ATTORNEY TRYON:

8 Q. Do you have an opinion about other --- well, we  
9 will get to that later. Let's go back to your report  
10 and if we could go to after paragraph 17. Well, that  
11 doesn't seem right. There we go. Okay. The title of  
12 this section on top of page five it says Focusing Solely  
13 on Performance Outcomes Undermines the Benefits of Sport  
14 for Youth and Young Adult Athletes. Do you see that?

15 A. Yes.

16 Q. Are you aware of any middle schools, elementary  
17 schools or high schools that focus primarily on  
18 outcomes?

19 ATTORNEY VEROFF: Objection.

20 THE WITNESS: No.

21 BY ATTORNEY TRYON:

22 Q. Are you aware of any surveys or studies of  
23 middle schools or high schools that find out if there  
24 are any schools that focus solely on performance

1 outcomes?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: I would just say that it  
4 depends what we mean by solely focus on performance  
5 outcomes. I think there are coaches out there that  
6 absolutely that is their primary thing and they care  
7 less about the hollistic, you know, wellness and just  
8 the overall experience of their kids and they are just  
9 trying to put the team together that is going to give  
10 them the best chance to win.

11 BY ATTORNEY TRYON:

12 Q. What coaches are you aware of in high school  
13 that do that?

14 A. Just in my experience across years. I see --- I  
15 see coaches that are very focused on winning that use a  
16 lot of punishment for mistakes and that seems to be what  
17 drives them.

18 Q. And so you believe there are coaches out there  
19 that focus solely on performance outcomes for youth and  
20 young adult athletes?

21 A. Yes, it just seems like a weird way to talk  
22 about it, that I'm not sure when --- I mean to put a  
23 percentage, if you're asking that, so are there coaches  
24 that 100 percent they're just focused on winning and

1 winning only, I'm not sure. I think there are probably  
2 coaches out there that are.

3 Q. Sorry. Go ahead.

4 A. Yeah, probably most, you know, it's not a  
5 100 percent, but when we say primary that that's what's  
6 really driving the boat for them. I think there are  
7 coaches out there.

8 Q. Well, you didn't say primary. You said solely.  
9 Those are your words, right?

10 A. Right.

11 ATTORNEY VEROFF: Objection.

12 BY ATTORNEY TRYON:

13 Q. Do you now want to modify that in your opinion?

14 ATTORNEY VEROFF: I'm sorry, objection.

15 THE WITNESS: Sorry. I'm just going back  
16 to this wording that you're talking about. Are you  
17 saying ---?

18 BY ATTORNEY TRYON:

19 Q. At the heading. Right about paragraph 18.

20 A. Sorry. I was looking underneath. Yeah, I mean  
21 it in the sense that that seems to be what all the  
22 discussion is about, that all were focused on just this  
23 isn't fair in terms of performance, and I'm saying that  
24 is missing a bigger picture of what youth sport can be.

1 Q. What discussion is that? You said that  
2 discussions all about it. What discussions are you  
3 talking about?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: The idea that it's not fair  
6 for transathletes to participate, right. And the only  
7 reason that we have any concern about this is from the  
8 performance issue. So in this case, I'm just saying if  
9 we think about BPJ and her being excluded from having  
10 the opportunity to play a sport, there's a lot at stake  
11 there as well as the other side is saying, hey, is this  
12 fair in terms of performance for athletes, right. That  
13 is what I meant by this.

14 BY ATTORNEY TRYON:

15 Q. So who is --- but you're not aware of any  
16 schools or colleges that have a policy of focusing  
17 solely on performance outcomes, right?

18 A. Right.

19 Q. But you think the statute, HB-3293 solely  
20 focuses on performance outcomes?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: I'm not sure what leads me  
23 to say that, but I think the statute excludes a group of  
24 athletes and that that would be unfortunate that they

1 wouldn't have a chance to just reap these benefits that  
2 can come from being a sports team.

3 BY ATTORNEY TRYON:

4 Q. So you are not saying that you believe that  
5 HB-3293 focuses solely on performance outcomes, right?

6 A. Okay. I'm not saying that. I think performance  
7 outcomes is --- seems to be a piece in it.

8 Q. Is that an appropriate piece to consider?

9 ATTORNEY VEROFF: Objection.

10 BY ATTORNEY TRYON:

11 Q. Let me rephrase that. Is performance outcomes  
12 something that's an appropriate thing for a legislature  
13 or a school to focus on?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: Yes.

16 BY ATTORNEY TRYON:

17 Q. Now, in paragraph 18 itself, you say, the second  
18 sentence, a myopic focus on winning in youth and young  
19 adult athletes ignore the other important benefits that  
20 school athletics offers young athletes such as teamwork  
21 and camaraderie which all advance when all athletes have  
22 the opportunity to play the sports they love and reap  
23 the benefits of such participation. Do you see that?

24 A. Yes.

1 Q. When you say a myopic focus, you're not  
2 excluding an appropriate level of focus on winning.  
3 Right?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: That's right.

6 BY ATTORNEY TRYON:

7 Q. Is there a reasonable variance of opinions in  
8 the sporting world --- sports world on what exactly the  
9 proper focus on winning ought to be versus the other  
10 benefits?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: Yes, I think there is an  
13 agreement within our field of sport exercise psychology  
14 that at the youth sport level the focus should be on  
15 giving as many kids as possible a chance to participate  
16 in youth support, right. And then as athletes move up  
17 the levels, that there is more emphasis and importance  
18 placed on winning.

19 BY ATTORNEY TRYON:

20 Q. What do you mean by that, as athletes move up  
21 the levels?

22 A. That typically there's a greater focus in high  
23 school than middle school, greater focus in middle  
24 school than elementary school, not that they have

1 organized sports within their schools, but just compare  
2 that to Little League, that as you move up to college,  
3 the emphasis on winning may increase and so on.

4 Q. Thank you. Would you agree with me that there  
5 is nothing in HB-3293 that says there should be a sole  
6 or myopic focus on winning in any of the sports it  
7 covers?

8 ATTORNEY VEROFF: Objection.

9 THE WITNESS: Yes, I would agree.

10 BY ATTORNEY TRYON:

11 Q. And the law doesn't say anything anywhere that  
12 there are not other benefits to sports other than  
13 winning. Right?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: Right.

16 ATTORNEY VEROFF: I think if we are going  
17 to have any questions about what the law says we should  
18 put it back up on the screen.

19 ATTORNEY TRYON: I don't have any more  
20 questions on that.

21 ATTORNEY VEROFF: Thank you.

22 BY ATTORNEY TRYON:

23 Q. Let's look at paragraph 21 in your report. You  
24 say there are many benefits to young people from

1 participating in athletic activities discussed further  
2 herein. Do you see that?

3 A. Yes.

4 Q. Is it possible that some young people are  
5 actually harmed by participation in athletic activities?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Yes, I think so.

8 BY ATTORNEY TRYON:

9 Q. What are some of those possible harms?

10 A. Some of those harms might be they have abusive  
11 coaches that push them too hard physically, that you  
12 know, don't treat them in a developmentally appropriate  
13 way, that there --- coaches allow like bullying to go  
14 on, that kids are made to feel shame if they don't  
15 perform well. Those kind of things.

16 Q. Outside the coaching, you mentioned bullying.  
17 So in sports that happens, right, some athletes bully  
18 other athletes, right?

19 A. It happens sometimes.

20 Q. And that can have long-term lasting negative  
21 impacts, right?

22 A. Yes.

23 Q. Are you aware that sometimes those who are  
24 athletes also belittle those who are not?



1 A. Yes, I'm aware of that.

2 Q. Let's move onto paragraph number 23. In  
3 paragraph 23 you talked about achievement goal  
4 perspective theory, right?

5 A. Yes.

6 Q. Does this theory apply to outside sports, say  
7 for example, to academics?

8 A. Yes, John Nicholls actually started there in  
9 classroom research.

10 Q. So goal perspective theory is about goals,  
11 right?

12 A. Yes.

13 Q. And how to set goals and how to reach goals?

14 A. Not exactly. I would use sort of another area  
15 of goal setting, but goal perspective theory is more  
16 about what is our --- how do we define success and how  
17 are we kind of valuing what is important in life. Some  
18 people think of goal perspective is how we set goals,  
19 right, that they need to be specific measurable. That  
20 is sort of another part of the literature. And instead,  
21 Nicholls is just thinking how to understand people's  
22 perspective on what they are trying to get out of  
23 things, right. And if you have this task goal  
24 perspectives that you are moving through life thinking

1     how can I just give it my best and be the best that I  
2     can be. And if you are moving through life with an ego  
3     perspective, you are thinking, hey, how can I  
4     demonstrate my competent --- my competence and show  
5     other people I'm better.

6         Q.     And that happens in all aspects of life, right,  
7     not just in academics?

8         A.     Yes, it's a pretty relevant theory.

9         Q.     You probably see it in faculty lounges and  
10    college boards and you will certainly see it lots of  
11    places in academia, right?

12        A.     Right, academia from I'm guessing law firms and  
13    probably everywhere we go in the world.

14        Q.     You bet. Absolutely you see it in law firms and  
15    pretty much every place, I agree with you.

16                Let me look at paragraph 24 with you. You say  
17    first is the developmental component of achievement goal  
18    perspective theory. Young children are incapable of  
19    accurately comparing their ability to others,  
20    overestimate their ability and are naturally focused on  
21    their effort as a marker of success. So I'm not saying  
22    that's wrong, but I don't see a source for that. Do you  
23    have a source for that statement?

24        A.     I do. Nicholls 1989 and my dissertation. I

1 apologize for missing that.

2 Q. Your dissertation?

3 A. Yes, I did a --- this was my line of work.  
4 Early in my career I did a series of three studies kind  
5 of tapping into those, how children gain an  
6 understanding of the concepts of effort, luck and  
7 ability.

8 Q. They gain an understanding of concepts of  
9 effort, of luck and ability. Is that what you said?

10 A. Yes.

11 Q. What does that mean, luck and ability?

12 A. So when kids are really little those --- they  
13 don't clearly distinguish these. So they just think,  
14 hey, whoever tries hardest, they are going to do the  
15 best, right, and they don't recognize ability in the  
16 same way that we do as we mature over time and that we  
17 understand, hey, gosh, you could run circles around me  
18 today, you were a much better, faster or stronger runner  
19 than I am, for example, right. And that doesn't mean  
20 that I can't try harder to improve but our ability  
21 levels are really different today.

22 So in these studies we set up scenarios and we  
23 show kids, and so there's kind of a contrast. Somebody  
24 didn't try hard at all actually outperformed somebody

1     who seems to be focused and concentrating, and we say,  
2     you know, what do we think is happening here. And so  
3     these concepts are just really blurred and kids are  
4     saying yeah, you know, this person is definitely trying  
5     harder. I don't know why they didn't perform very well.  
6     This person looks like they are not trying hard. But if  
7     they both do it again and they try hard then I think  
8     they will get the same score. So just this wide variety  
9     of scenarios. Kids don't distinguish like luck and  
10    ability. So you know, if you're around little kids, you  
11    know, they like games like Chutes and Ladders or  
12    Candyland. Those are a hundred percent luck games,  
13    right. There's no ---.

14       Q.     Now I understand. I thought you said lock,  
15    L-O-C-K. You are saying luck, L-U-C-K?

16       A.     Right, right.

17       Q.     Thank you. I didn't mean to have you go on with  
18    that long explanation when I just misunderstood your one  
19    word. But thank you for that explanation. That helps  
20    me understand what you're saying here.

21             So my --- then I'm just interested in what is it  
22    that at some point little kids somehow realize that they  
23    have overestimated their ability, is that something that  
24    just naturally happens or is it something that other

1 people have to point out for them for them to realize  
2 it, whether it be teachers or coaches or just the kids  
3 around them?

4 A. Okay.

5 So just a quick example. Nicholls would put a  
6 list of faces, you know, like generic smiley faces 1 to  
7 30 and you go in with a class of five-year-olds and you  
8 interview them one at a time. And you say, okay, this  
9 is everybody in your class and they are listed by how  
10 good a reader they are, right. And so this person is  
11 the very best in your class, right, this person is just  
12 the worst reader, this person is the middle. Which one  
13 is you? And the mean for kids in kindergarten is like  
14 three, which tells us they're all saying well, that's me  
15 up there, high, right, I'm the best reader in the class.  
16 But as you move through those elementary school years,  
17 the mean shifts to like 15 by the time they're say in  
18 sixth grade, because when you ask six graders, all  
19 right, here's everybody in your class, where do you fit  
20 in, they are much more accurate. And when they ask the  
21 teachers, there's no correlation, right, with younger  
22 kids, because they are all over the place. But by the  
23 time you get to the upper elementary grades it  
24 correlates highly with what the teachers are saying in

1 terms of the kids' reading ability. And Nicholls said  
2 this is so key because it makes Middle School a very key  
3 developmental period as kids are gaining this  
4 understanding all of a sudden now there is a reason to  
5 try your hardest or withdraw effort because you don't  
6 want to look silly. You know that other people might be  
7 more skilled than you. And that's why he was so  
8 passionate about this theory. Even though we are  
9 capable of looking at the world that way, we all can  
10 choose to just stay focused on our effort and ability  
11 and being the best that we can be.

12 Q. So there are people that --- sorry.

13 A. That is the other piece of the climate, how do  
14 we train teachers and coaches to create that  
15 environment. That tells people keep that task  
16 involvement going.

17 Q. And there are people that continue to  
18 overestimate their abilities throughout life, right?

19 A. Yes.

20 Q. And that is exacerbated if those people are  
21 never corrected to let them know in some way that their  
22 abilities are not what they think they are, right?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Yeah, I'd say our bigger

1 issue within education is not that kids are  
2 overestimating but they're --- you know, don't have as  
3 high self-esteem or confidence and those type of things.  
4 But are there people out there that could be  
5 overestimating? Absolutely.

6 BY ATTORNEY TRYON:

7 Q. So Nicholls did the study of academic. Did he  
8 do any study athletically?

9 A. That's where I picked it up and looked in the  
10 physical domain and made scenario specific to physical  
11 activity and conducted these three studies that looked  
12 at effort and luck and ability with kids aged 5 to 12  
13 and sort of replicated his work, and we found that kids  
14 move through these same levels of understanding in the  
15 physical domain where things are a little bit more  
16 obvious for us to see, right. If we're sitting here  
17 working on math problems we not be able --- it might not  
18 be as evident that, hey, somebody is moving through  
19 these and they are stronger, right. But in the physical  
20 domain, when we see each other and move and we can see  
21 each other's skill levels, in some of these things move  
22 a tiny bit faster but it was the same sort of stages of  
23 development, if you will.

24 Q. Is your dissertation cited in your bibliography?

1 A. No, it is not.

2 Q. Is it in your list of publications?

3 A. It's in my Vitae.

4 Q. You have a lot of publications. Can you direct  
5 me to it?

6 A. You're going to go back a ways. Okay. So the  
7 dissertation study is on 1997, it's on page six. Fry  
8 and Duda.

9 Q. I see Fry and Duda, 1997.

10 A. Yes, those are my dissertation studies. And I  
11 followed it up with two studies at the top of that page,  
12 Fry 2000. There are two different studies.

13 Q. Okay.

14 Let me move on to paragraph 25 of your report.  
15 I just goofed on my --- there we go. I lost all the  
16 pictures, so I couldn't see you anymore. Just one of  
17 the hazards of technology. Okay. So I'm looking at  
18 paragraph 25 and you talk about task. Here you talk  
19 about goal --- primary goal orientations are task and  
20 ego orientation, right?

21 A. Yes.

22 Q. So you're not saying --- I think you've said  
23 this before, but I just want to make sure I understand.  
24 You're not saying that ego orientation is bad from an



1 individual basis, are you? It just kind of sounds like  
2 it's a pejorative. You don't mean it that way, do you?

3 A. I think it depends on what your aim is and if  
4 you have --- if you want athletes to have fun and try  
5 hard and have good relationships and, you know, feel  
6 good about themselves, have confidence, have empathy for  
7 others, things like that, then it's not something we  
8 would want to promote is the orientation because across  
9 a wide body of literature those just don't lead to what  
10 we call adaptive outcomes, right.

11 On the other hand, many elite athletes are high  
12 in task and ego orientation, right. And the big deal  
13 here is that people really need that high task  
14 orientation to sustain motivation over time with the ups  
15 and downs and overcoming injuries, with all of that, but  
16 ego orientation isn't necessarily a bad thing in this  
17 case. But it probably isn't great if you don't have  
18 that high task orientation to go with it.

19 Q. So let's move on to paragraph 26. Okay. So in  
20 the last sentence, I think it is the next to last  
21 sentence. Okay. The sentence that starts when the  
22 environment created by coaches and others is a caring  
23 environment, do you see that part?

24 A. Yes.

1 Q. It continues, athletes are more likely to  
2 perceive the overall climate as task-involving. A  
3 caring environment is one where athletes feel safe,  
4 welcome, comfortable and valued and are treated with  
5 kindness and respect by all in the sports setting. You  
6 wrote that, right?

7 A. Yes.

8 Q. And that means a caring environment for all  
9 athletes, right?

10 A. Yes.

11 Q. And a caring environment also requires rules?

12 A. Yes.

13 Q. A caring environment still includes the coach  
14 --- let me rephrase that. A caring environment still  
15 includes the coach and officials and requires them to  
16 make calls that make --- that some athletes don't like  
17 and may even get upset, right?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: Right.

20 BY ATTORNEY TRYON:

21 Q. So how do you square that with a caring  
22 environment when the rules are going to make some  
23 athletes unhappy?

24 A. So this is about coaches kind of saying, yes, I

1 want to be intentional and I want to do everything I can  
2 to create this environment that is going to help bring  
3 out the best in my athletes, right, and I don't have  
4 total control over what my athletes perceive. I'm just  
5 going to do what I can to promote these features that  
6 are in the last sentence. I'm also going to get  
7 athletes, trying to get them to buy in so that they see  
8 how valuable this is if we create this caring  
9 task-involving climate. It doesn't in any way mean, you  
10 know, we're not going to get a bad call or things aren't  
11 going to happen, things don't go our way, somebody  
12 starts before I do. Right. All kinds of things. Those  
13 are just part of sports, right, but this refers to the  
14 coaches buying into this truckload of research that we  
15 have that shows how we can help all athletes have a good  
16 experience.

17 Q. You're not advocating for laws requiring a task  
18 oriented environment, are you?

19 A. No. That would be tempting. No. We're just  
20 saying if our goal is to help athletes reach their  
21 potential, then we have a lot of scholarship to guide  
22 --- to guide what we do. We know a lot about how to  
23 make that happen.

24 Q. Do you think coaches are unfair if they don't

1 adopt a task oriented approach?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: I think they do a lot of  
4 harm, right, and they set athletes up to experience all  
5 these negative aspects, right, and they don't have fun  
6 and they don't try as hard. They don't have as good a  
7 relationship, they experience shame. And all of that  
8 stuff just means that a lot of kids aren't going to  
9 stick with it and we are going to lose a lot. And that  
10 just has long-term implications for people living  
11 physically active lives, right. When you have bad  
12 experiences, you know, a lot of people are running back  
13 out there to keep participating.

14 BY ATTORNEY TRYON:

15 Q. Well, officials make calls all the time that  
16 upset athletes. Athletes think they're unfair or  
17 they're wrong. You're a tennis player. You remember  
18 John McEnroe?

19 A. I do.

20 Q. He yelled all the time. All the time is an  
21 exaggeration. He frequently claimed the calls the  
22 officials made were unfair, right?

23 A. Yes.

24 Q. Do you think that the umpires should have

1 changed their calls to satisfy him in order to provide a  
2 more caring environment for him?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: I think they should have  
5 taken him out of a few tournaments and I feel like that  
6 would have nipped it in the bud. But with respect to a  
7 caring and task-involving climate, what you're trying to  
8 say is we are trying to treat everyone with kindness and  
9 respect and we're going to understand that officials are  
10 out there trying to do the best they can, and they're  
11 going to make mistakes just like all of us make  
12 mistakes. And so the goal would be for us to be  
13 respectful. And if we feel like bad calls are made we  
14 would deal with it in a respectful way, right, but we  
15 don't deal with it like Will Smith did, right, like when  
16 he --- we're trying to learn to control our emotions,  
17 right, and wow, it just makes sport a powerful arena  
18 when athletes can learn those terms.

19 BY ATTORNEY TRYON:

20 Q. Right. I understand that. And I'm just asking,  
21 so you got rules, you got calls by higher powers and you  
22 got to live by those rules. And if you think they're  
23 unfair then you should ask them to have them changed,  
24 right?

1 A. Yes.

2 Q. But it is still a caring environment and just  
3 because you think it is unfair to you in particular  
4 doesn't make it uncaring.

5 Is that a fair statement?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: You know, the way research  
8 is done is you're asking every athlete on the team to  
9 fill out a survey, right. So it doesn't mean that there  
10 is a 100 percent agreement, right. I may feel like the  
11 coach isn't fair, hasn't given me a fair shot, right,  
12 and somebody else may not feel that way. But in  
13 general, there's sort of a consensus on most teams, you  
14 know, that people are seeing it more similarly.

15 BY ATTORNEY TRYON:

16 Q. Yes, I guess I'm just asking specifically about  
17 rules. Rules by their very nature, they are not caring,  
18 they don't care about individuals. They are just set  
19 there and you need to follow them, right?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: Yeah. Hopefully they have  
22 been established in a caring way, thinking about what is  
23 best for athletes, but there is just so many things  
24 across sports that are not necessarily fair, right, and

1 so we just kind of have to keep the focus on the rules.  
2 I had an athlete tell me that his teammate has been  
3 diagnosed with MS and that doesn't seem very fair,  
4 right, that a young person has to go through that, but  
5 I'm glad that they are part of a caring and  
6 task-involving team where they want this athlete to  
7 continue to be part of the team, right. And in more of  
8 an ego involving team, we might just say, hey, sorry,  
9 you are really going to impair our ability to win.  
10 That's our focus, that's why we are here, so you know,  
11 have a good life, right. And I mean, what's happening  
12 is they are just working with this athlete to still be a  
13 vital part of the team.

14 BY ATTORNEY TRYON:

15 Q. Do you think you need to be an athlete to have a  
16 fulfilling life?

17 A. No.

18 Q. I'm glad to hear you say that because I'm not  
19 much of an athlete.

20 ATTORNEY TRYON: Well, if people want to  
21 break for lunch now, I'm okay with that. I can take a  
22 break now or we can keep on going. Whatever Dr. Fry ---  
23 Professor Fry, whatever your preference is and other  
24 counsel?

1                               THE WITNESS:   It might be nice to have a  
2   break at this point.

3                    ATTORNEY TRYON:    Okay.    Do you want to go  
4    and get some lunch?

5                    THE WITNESS:    Yes, sounds good.

6                                    ATTORNEY TRYON:    How long do you need?    I  
7    don't know what your environment is around you, if you  
8    brought a lunch or there's a restaurant nearby.    Is half  
9    an hour long enough?    Do you need longer?

10                                   THE WITNESS:  No, a half hour would be  
11  great.

12                    ATTORNEY TRYON: Then why don't we take a  
13 break and come back at ten minutes after the hour?

14 THE WITNESS: Okay.

15                    VIDEOGRAPHER:    Going off the record.    The  
16    current time reads 1:40 p.m. Eastern Standard Time.

17 | OFF VIDEOTAPE

18 | ---

19 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

20 | ---

21 | ON VIDEOTAPE

22                               VIDEOGRAPHER: We are back on the record.  
23   The current time reads 2:11:00 p.m. Eastern Standard  
24   Time.



1 BY ATTORNEY TRYON:

2 Q. Okay.

3 Let's go back to paragraph 30 of your report.  
4 It says athletes high in task orientation also report  
5 greater confidence and perceived ability and task  
6 orientation has been correlated with both self and team  
7 efficacy and greater perceived confidence ---  
8 competence, excuse me. You are saying greater  
9 confidence and perceived ability. Perceived ability is  
10 different than reality, isn't it?

11 A. Yes.

12 Q. Are you saying that is a good thing?

13 A. In the psychology world it is pretty well  
14 accepted that perceptions are very important. So yeah,  
15 you are right in identifying that this is athletes'  
16 perceptions of their ability. And so athletes who have  
17 a high task orientation in turn, you know, seem to have  
18 more confidence and believe that they have higher  
19 ability.

20 Q. And then in paragraph 31 you say, by contrast,  
21 ego orientation, i.e. the non-pejorative descriptive  
22 term for defining success based on ability and  
23 performance outcomes is not correlated with perceived  
24 ability in general confidence of athletes high in ego

1 orientation was more of based on their perception of  
2 ability and having a strong physical presence. But in  
3 that first sentence it indicates --- it suggests that  
4 ego orientation is based on actual reality --- excuse,  
5 actual ability rather than perceived ability. Do I  
6 understand that indication correctly?

7 A. Where do you see that it is on actual ability?

8 Q. Okay.

9 Let me start that over. So in the sentence it  
10 says, by contrast, ego orientation i.e. the  
11 non-pejorative descriptive term for defining success  
12 based on ability and performance outcomes is not  
13 correlated with perceived ability in general. Does that  
14 mean it's correlated with actual ability rather than  
15 perceived ability?

16 A. Okay. I understand. No. No, what it means is  
17 that if you're --- if you're somebody who's high in task  
18 orientation, then you're feeling successful when you  
19 give your best effort, when you see improvement, right.  
20 Those are things we have more control over. And so when  
21 you're focused that way you tend to have higher  
22 perceptions of ability, right, because that is your  
23 focus. If you are high in ego orientation, right, and  
24 so I'm feeling successful if I out perform others, if I

1 win, if I demonstrate competence, right, to a greater  
2 degree than other people, right, so if that doesn't  
3 happen but that is how I judge success, then chances are  
4 my perceptions of ability are going to be lower.

5 If I'm the star on the team and I judge success  
6 based on how I compare to others, then I probably get a  
7 lot of kudos and get reenforced for that. So that's why  
8 we will guess there is no correlation there in the way  
9 there is task, right. And that is why Nicholls was most  
10 concerned about people high in ego orientation who had  
11 lower perceptions of ability, because it makes us  
12 vulnerable. That's why I'm so focused and care about  
13 I'm not --- you know I'm not as good. Does that make  
14 sense?

15 Q. I'm processing it. I still want to understand  
16 it a little better. In paragraph 30, athletes high in  
17 task orientation also report greater confidence in  
18 perceived ability. Am I right that perceived ability is  
19 not actual ability?

20 A. Right, it's not. Items would just tap into I  
21 would be responding to a question like I'm really good  
22 at basketball or something, I'm very skilled in  
23 basketball or I'm not very skilled and I would be  
24 answering it on a quantitative scale, so it would be my

1 perception of it.

2 Q. Isn't it important that athletes understand  
3 their actual ability rather than just their perceived  
4 ability?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: I think it's important for  
7 coaches to share with athletes where they are and what  
8 they can do to keep improving. I'm not sure it's super  
9 beneficial that we need to go around and tell athletes,  
10 hey, you're not very good, this person is better than  
11 you, right, those are just kind of distractions, but  
12 helping people see where they are and what they can do  
13 to improve, yeah, would seem valuable.

14 BY ATTORNEY TRYON:

15 Q. In order for an athlete to improve doesn't the  
16 athlete need to understand where he or she is rather  
17 than just where he or she perceives him or herself to  
18 be?

19 A. Yes, we get into kind of --- are we talking like  
20 morbid ability, right, or --- and so in that sense do I  
21 need to tell --- I've got five athletes here. Do I need  
22 to make sure they all know where they rank between one  
23 and five, right, in my mind who's the best? Or do I  
24 just need to take each athlete aside, right, and make

1 sure that they understand here's some areas you could  
2 really improve on, and I care less about even having a  
3 conversation about who's the best right now, right, that  
4 this person is better than this person, right, it's  
5 moot. And that's where Nicholls was coming from. What  
6 if we as coaches did more just to focus people on,  
7 right, on what they could do to keep improving?

8 Q. And athletics it is certainly obvious, though,  
9 what your athletic ability is at least as far things  
10 involving racing times, for example, you get your times  
11 so you know what your ability is as compared to yourself  
12 or as compared to other people, right?

13 A. Right. I think there is just a lot in sport  
14 that's giving us feedback of how we compare to others.  
15 And also when we see these times it's --- that's  
16 information that we can track how we're improving,  
17 right, and how we are doing.

18 Q. So why do we share with people --- well, strike  
19 that. I will move on.

20 Okay. Paragraph 32, please. Let me know when  
21 you see that.

22 A. I see it. Thanks.

23 Q. Athletes high in ego orientation report lower  
24 companionship and greater conflict with teammates. For

1     that phrase --- you can go ahead and read the whole  
2     sentence if you want, but I want to ask you a question  
3     about that phrase or that clause.

4         A.     Okay.

5         Q.     So for that clause you cite Balaguer in that  
6     study, right?

7         A.     Yes, Balaguer (corrects pronunciation).

8         Q.     Thank you for helping me pronounce that,  
9     Balaguer. And is there anything else on which you base  
10    that first clause?

11        A.     Yes, there are other references. This paragraph  
12    in general is just referring to we have better  
13    relationships, right, when people are high in task  
14    orientation. They're really valuing that aspect of  
15    helping each other improve. And in an ego orientation,  
16    when, I'm just kind of zoned in on me and me wanting to  
17    show that I'm better than my teammates, right, it just  
18    sets things up to not having as good a relationship.  
19    This doesn't mean that every athlete out there that is  
20    high in orientation, it just means there's a tendency  
21    that this correlates --- that you're much more likely to  
22    see this when people have a high ego orientation.

23        Q.     So I'm just --- my question is a little more  
24    precise. Thank you for that explanation. But the first

1 clause there you cite only to Balaguer. I'm asking if  
2 there are other sources for that contention that  
3 athletes high in ego orientation report lower  
4 companionship and greater conflict with teammates. And  
5 if there are other things, what are those other studies?

6 A. Like Smith and Small found that in youth sport  
7 athletes, you know, didn't like their coach as much,  
8 didn't think their coach knew as much about the sport,  
9 didn't like their teammates as much when they had like  
10 high ego orientation.

11 Q. Is there a reason why you didn't cite Smith and  
12 Small for that proposition?

13 A. Yes. Yeah, I think it crosses documents. We  
14 could have added another, you know, 150 references  
15 probably. Tried to keep it more manageable, which it's  
16 just consistent, that if that is something that you care  
17 about, the quality of relationships, then it doesn't  
18 come out often as --- you know, it comes out with the  
19 task orientation, not an ego.

20 Q. Well, the reason I'm asking this is I read that  
21 Balaguer report, and I did not see anything in there  
22 that supported this proposition of this first clause of  
23 this sentence. Are you confident that it's in there?

24 A. It would be good for me to review.

1 Q. If I showed you the article would you be able to  
2 locate it without too much difficulty?

3 A. I'm not sure. I'd probably just have to review  
4 it. But having ---.

5 ATTORNEY TRYON: Well, let's bring it up,  
6 and maybe I've just missed it. And so that would be ---  
7 the name of it is Motivational Climate and Goal  
8 Orientations as Predictors of Perceptions of Improvement  
9 Satisfaction in Coach Ratings Among Tennis Players.  
10 Educators. So Jake, if you could find that and pull  
11 that up.

12 VIDEOGRAPHER: Do you want it marked?

13 ATTORNEY TRYON: Yes. I think we are on  
14 8 now, right?

15 VIDEOGRAPHER: I think it's 7, unless I  
16 missed something.

17 ATTORNEY TRYON: Well, I will take your  
18 word for that.

19 ---

20 (Whereupon, Exhibit 7, Article, was  
21 marked for identification.)

22 ---

23 ATTORNEY TRYON: You know what, I should  
24 ask you, Jake, go ahead and put that in the chat room so



1 that Professor Fry can download it and look at it real  
2 quick.

3 VIDEOGRAPHER: Already did.

4 ATTORNEY TRYON: Great.

5 BY ATTORNEY TRYON:

6 Q. So Professor Fry, you can either look at this  
7 with me or it might be best if you just double check in  
8 the chat room and then it should download it and you  
9 should be able to bring it up and look through there at  
10 your --- I don't want to say leisure but how you would  
11 prefer to do it.

12 A. Okay. I may have to get help here because it's  
13 not appearing on my end.

14 Q. Do you see it in the chat room?

15 A. Yeah, I can click on it, but then it takes me to  
16 some case view net thing and it says I need a code and  
17 password. I'm using their system, so I'm guessing it's  
18 related to that.

19 VIDEOGRAPHER: Not the link. There  
20 should be a PDF document you can just click open.

21 THE WITNESS: Okay.

22 VIDEOGRAPHER: I don't know how it is on  
23 an iPad, so I will admit I'm at a loss.

24 THE WITNESS: Okay.

1 BY ATTORNEY TRYON:

2 Q. Are you able to look at it now?

3 VIDEOGRAPHER: The document called 007 at  
4 the beginning?

5 THE WITNESS: When I click on the chat  
6 I'm just seeing one link listed.

7 BY ATTORNEY TRYON:

8 Q. Underneath the link there should be a PDF.

9 A. Okay. It's not showing up for me.

10 Q. Okay.

11 VIDEOGRAPHER: Alternatively, Counsel, I  
12 can give remote control of the document to her so that  
13 she can scroll on it herself.

14 ATTORNEY TRYON: Let's do that.

15 VIDEOGRAPHER: Okay.

16 THE WITNESS: Thank you.

17 VIDEOGRAPHER: You should have control if  
18 you just try to click on the screen and you just scroll  
19 it and move it. Perfect.

20 THE WITNESS: Okay.

21 So how do I move the document?

22 VIDEOGRAPHER: So if you would move the  
23 cursor like over here and drag it.

24 THE WITNESS: Sorry. Can you say that

1 again?

2 VIDEOGRAPHER: You can control the mouse  
3 cursor right now, so you would have to move it over here  
4 and just drag it down or click on this down arrow down  
5 here?

6 THE WITNESS: So I don't really have a  
7 mouse, right, with this. It's just using my finger on  
8 the screen.

9 VIDEOGRAPHER: Right. If it works like  
10 normal iPad things, then you would --- to click  
11 something you would double tap it and then hold, which  
12 sounds convoluted.

13 ATTORNEY TRYON: Well, if you have any  
14 difficulties with it, why don't we let Jake take control  
15 and scroll down with it?

16 THE WITNESS: Okay.

17 I think Dana is outside, if you want me  
18 to get her to help real quick to save time.

19 ATTORNEY TRYON: I'll tell you what,  
20 let's do this. This is not a critical point for me. I  
21 just wanted to try and understand this. So let's come  
22 back to this later. All right?

23 THE WITNESS: Okay.

24 ATTORNEY TRYON: We have time.

1 BY ATTORNEY TRYON:

2 Q. In paragraph 32, you talked several times about  
3 the climate, right?

4 A. Yes.

5 Q. And in the sentence it says despite the ego  
6 involving climates emphasis on the performance outcomes  
7 results across studies suggest the benefits of task  
8 involving climate may have a direct impact on athletic  
9 performance and ultimately improve performance outcomes.  
10 So that sentence is talking about the climate, not the  
11 individual's orientation, right?

12 A. That's correct.

13 Q. And you say it may have a direct impact. So by  
14 may that is not suggesting that it's probable, it is  
15 just saying that it might. Is that a fair statement?

16 A. Yes.

17 Q. Then let me move down to paragraph 33.

18 A. Can I just say on that point ---?

19 Q. Yes.

20 A. I think this is an area within our body of  
21 research that there is less support for, but the studies  
22 that are in place would suggest that perceptions of a  
23 task involving climate would lead to greater  
24 performance. So there is some evidence for that, but I

1 would agree it's not strong and that is why the wording  
2 is softer there, right, but there is no evidence  
3 suggesting that perceptions in an ego involving climate  
4 would lead to better performance. And so on the one  
5 hand people just might be thinking, wow, that's a  
6 no-brainer, right, if all you care about performance go  
7 with that ego involving climate, but for all these other  
8 reasons we would argue it makes sense, right. If people  
9 are having more fun and having better relationships and  
10 trying hard and so on, that it might lead to better  
11 performance.

12 Q. In paragraph 33 you talk about young athletes  
13 with a high ego orientation participating in a variety  
14 of sports have reported higher traits and state  
15 cognitive and somatic anxiety as well as greater  
16 concentration dysfunction, maladaptive perfectionism and  
17 concern over making mistakes. Now, my question is,  
18 isn't that true for basically any endeavor, that there's  
19 going to be --- you're going to have anxiety in trying  
20 to succeed?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: You know, definitely anxiety  
23 and stress is part of sport. With these climates though  
24 what we're seeing consistently is that athletes report

1     that when they perform their best they were less  
2     bothered by stress and anxiety. In fact, the kind of  
3     epitome of being --- what we call being in flow, right,  
4     you just --- you feel high confidence, you're  
5     concentrating well, you're not worried about  
6     distractions, you 're not stressed, right. And so  
7     consistently people would report a higher ego  
8     orientation, they just --- no matter how it's measured  
9     all this kind of bad stuff that we'd rather take out,  
10    right, and not have people worried about, young athletes  
11    worried about, they just experience it more. So the  
12    cognitive anxiety is what's going on up here, right,  
13    worry and doubt, and the somatic anxiety is I can't get  
14    a grip on my heart rate, my muscles feel tense, I have  
15    butterflies and those kinds of things. So we see that  
16    more with athletes high in ego orientation.

17       Q.     Well, when you were going through college and  
18     getting your Ph.D., you were striving to do your very  
19     best and you were striving to succeed and get As to get  
20     your Ph.D. All of those things are something that  
21     requires you to succeed and to convince other people how  
22     good you are, right?

23       A.     To succeed and make the world better.

24       Q.     Right, but to get a Ph.D. that's a tough --- is

1 that an easy thing to do?

2 A. No, it is not.

3 Q. And it is based on what other people think of  
4 you and your work, right?

5 A. Yeah. I mean, there's requirements to complete  
6 a Ph.D. for sure that involve other people.

7 Q. And they're judging your work, right?

8 A. Right.

9 Q. And that creates, I presume, for most people it  
10 creates a lot of anxiety. Did it for you?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: You know, at times it was  
13 stressful, but I enjoyed every minute of it. And so  
14 some of this comes back to anxiety is pretty typical and  
15 we're going to experience that, but what I'm feeling  
16 about it is helping people develop strong coping skills  
17 so that they can deal with that stress and anxiety. And  
18 that is, you know, another study that we recently  
19 published that people who perceived a caring task  
20 involving climate reported greater coping skills, right.

21 BY ATTORNEY TRYON:

22 Q. And to develop those coping skills you need to  
23 sometimes follow the rules of others like those on the  
24 Ph.D. committee, if that's the right terminology, rather

1 than saying, hey, committee you're wrong, I'm right, you  
2 have to do what I say, right?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: I'm not sure that's related  
5 to coping skills, but what you said is true, it does  
6 take place when you're working on a Ph.D.

7 BY ATTORNEY TRYON:

8 Q. And pretty much every part of life you can't  
9 just say I don't like your rules, do it my way and get  
10 your way, you have to cope with the world as it is, not  
11 as you want it to be all the time, right?

12 A. Right.

13 ATTORNEY VEROFF: Objection.

14 BY ATTORNEY TRYON:

15 Q. And that's a hard thing, right?

16 A. It is.

17 Q. But it builds character, doesn't it?

18 A. It sure can.

19 Q. So let me move on then. I think I understand  
20 what you're saying in this paragraph. Looking at  
21 paragraph 35, okay, let me see if we addressed some of  
22 these things. Have you studied depression and mental  
23 health with athletes?

24 A. No, it's not my area. Yes, I've read some, but



1 no, it's not an area that I studied in depth.

2 Q. So you haven't written on it?

3 A. We might have a study where we include some  
4 parameters of psychological well-being, like studies  
5 with kids, looking at how the climate relates to a  
6 caring climate relating to reporting greater hope and  
7 happiness and less depression and sadness, but studying  
8 like depression is not a primary area for me.

9 Q. Have you looked at the issue for athletes  
10 between injuries and mental health or depression?

11 A. No, no.

12 Q. Are you aware that there are studies and papers  
13 on that issue?

14 A. Yes.

15 Q. Okay.

16 Let me ask you to take a look at --- well,  
17 before we go, have you heard of the American College of  
18 Sports Medicine?

19 A. I have.

20 Q. And are they well regarded?

21 A. Yes.

22 Q. Have you heard of Andrew Wolanin?

23 A. I have not.

24 ATTORNEY TRYON: Okay.

1 Well, let's bring up this exhibit, which  
2 will be then Exhibit --- I think this will be --- well,  
3 I will just ask, Jake, help me out with numbers. The  
4 title is Depression and Athletes, Prevalence and Risk  
5 Factors.

6 VIDEOGRAPHER: I believe we're on Number  
7 8 now.

8 ATTORNEY TRYON: Okay. Perfect.

9 VIDEOGRAPHER: Just give me one moment.  
10 ---

11 (Whereupon, Exhibit 8, Article, was  
12 marked for identification.)  
13 ---

14 BY ATTORNEY TRYON:

15 Q. Have you seen this document that I now marked as  
16 Exhibit-8 before?

17 A. No, I haven't. Jake, can you show the top again  
18 please?

19 VIDEOGRAPHER: That is as far up as it  
20 goes.

21 THE WITNESS: Okay.

22 BY ATTORNEY TRYON:

23 Q. Are you familiar with any of the three authors?

24 A. No.

1 Q. So I am going to ask you about several parts in  
2 here, so it might be helpful to have --- try one more  
3 time to see if you can --- give you access to it, to  
4 give you control over the screen so you can scroll down.  
5 And you should be able to treat it just like anything  
6 else on your iPad, with your fingers or however you do  
7 it.

8 A. So when I click on control it has like a  
9 keyboard and then it has a question mark.

10 ATTORNEY TRYON: Jake, any input?

11 VIDEOGRAPHER: It sounds like it's just  
12 bringing up the iPad keyboard and there should be  
13 something that looks like a keyboard and that minimizes  
14 the keyboard itself so you can just get back to the  
15 screen.

16 ATTORNEY VEROFF: I'm sorry, Dr. Fry.

17 THE WITNESS: No, go ahead.

18 ATTORNEY VEROFF: I was just going to  
19 ask, Dave, is there any way to get in touch with Dana.  
20 Maybe we could send her the PDF and have her print them  
21 so that the witness could have hard copies. That might  
22 make this all work a little bit easier for any --- for  
23 this or any other studies that you would want her to  
24 look at.



1                    VIDEOGRAPHER:    Okay.

2                    ATTORNEY TRYON:    Okay, right there is  
3    great.

4    BY ATTORNEY TRYON:

5            Q.        Okay.

6                    Do you see that, Doctor Fry?

7            A.        Yes.

8            Q.        So the title you have here is Excluding Groups  
9    from Participating in High school Athletics would  
10   Deprive Them and Their Teammates of a Wide Range of  
11   Educational Benefits.    Did you write that?

12          A.        Yes.

13          Q.        Okay.

14                    Then I would like to compare that to the title  
15   that you have in your latest report, if you could bring  
16   that up, and that is on page ten.    So here you change  
17   groups from to excluding transgender students.    Why did  
18   you make that change?

19          A.        I think just because it's specific to this case.

20          Q.        Well, the specifics of this case were the same  
21   before as they are now, so do you have any better  
22   explanation?

23                    ATTORNEY VEROFF:    Objection.

24                    THE WITNESS:    You know, I edit everything

1 I write, and so if I see something that may clarify more  
2 or change a word, you know, that makes it better, then I  
3 would do that. I think that's what happened here.

4 BY ATTORNEY TRYON:

5 Q. Are you aware of any groups being excluded from  
6 participating in youth or adult athletics?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: You know, I think a lot of  
9 times kids with disabilities are kept out. I think kids  
10 who have limited financial resources sometimes are  
11 limited. I think groups are --- so it may not be a rule  
12 that you cannot play, but you know, there are other  
13 groups who miss out on the opportunities to play.

14 BY ATTORNEY TRYON:

15 Q. Other than that, can you think of any groups  
16 that are excluded by any rule or requirements from any  
17 athletic activities?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: Not that's coming to mind  
20 that are, you know, like obvious or stated in the rules,  
21 but I think there's personal different ethnic, minority  
22 groups, for example, that might have less exposure to  
23 sport, things like that.

24 BY ATTORNEY TRYON:

1 Q. Let me ask you about Special Olympics. Is the  
2 entrance into Special Olympics --- do you know anything  
3 about --- let me back up. You're aware of what Special  
4 Olympics is, right?

5 A. Yes, I'm aware of it.

6 Q. And do you know if there are specific  
7 requirements in order to be able to participate in  
8 Special Olympics?

9 A. I know there are. I couldn't tell you what they  
10 are across the different categories and all.

11 Q. Can able bodied athletes and able minded  
12 athletes participate in Special Olympics?

13 A. Special Olympics was created to give athletes  
14 --- okay. Dana said she hadn't received those. Just to  
15 double check, that it is Dana@midwestreporters.net.  
16 It's not .com.

17 VIDEOGRAPHER: I will double check it.

18 THE WITNESS: Thank you.

19 ATTORNEY TRYON: Sorry to interrupt your  
20 flow.

21 BY ATTORNEY TRYON:

22 Q. So my question was can able-bodied athletes and  
23 able-minded athletes participate in Special Olympics,  
24 and you started to say Special Olympics was created.

1       A.       Right. The answer is no, they can't  
2 participate.

3       Q.       So that is an exclusion, right?

4       A.       Yes.

5       Q.       And it's a categorical exclusion, right?

6       A.       Yes.

7       Q.       Do you think it's a fair exclusion?

8                    ATTORNEY VEROFF: Objection.

9                    THE WITNESS: Sorry. Yes, in this case.

10       BY ATTORNEY TRYON:

11       Q.       And why?

12       A.       Because those able-bodied athletes have another  
13 area where they can compete.

14       Q.       And so Special Olympics is especially designated  
15 for certain athletes who are not able to compete against  
16 able-bodied and able-minded athletes, right?

17       A.       Uh-huh (yes), yes.

18       Q.       So it's essentially a protected category, right?

19                    ATTORNEY VEROFF: Objection.

20                    THE WITNESS: Yes. I don't know if it is  
21 protection so much, as just provide an opportunity.

22       BY ATTORNEY TRYON:

23       Q.       And that exclusion is of --- with respect to  
24 Special Olympics, you wouldn't call that arbitrary,



1 would you?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: No.

4 BY ATTORNEY TRYON:

5 Q. Now, if we go down in paragraph 37, the second  
6 sentence says, if transgender students are arbitrarily  
7 excluded from youth sports they are, in turn, deprived  
8 of those positive experiences and outcomes and their  
9 teammates are deprived of a genuinely optimal sports  
10 experience.

11 Do you see that?

12 A. I do.

13 Q. If that exclusion is based on safety concerns or  
14 performance concerns then it would not be arbitrary.

15 Correct?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: If there were strong  
18 evidence for those.

19 BY ATTORNEY TRYON:

20 Q. And just --- I think we covered this, but I just  
21 want to make sure I'm correct, you are not an expert on  
22 safety issues, right?

23 A. That's right.

24 Q. And you are also not an expert on performance

1 issues, right?

2 A. That's right.

3 Q. What would you call strong evidence?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: I call it data that the  
6 experts come to agree that --- you know, how they can  
7 guide the rules for sport, right, and balance inclusion  
8 and fairness.

9 BY ATTORNEY TRYON:

10 Q. Would you agree with me that not all experts  
11 agree on everything, even with their own field, right?

12 A. That's right.

13 Q. Is there a minimum number of experts that would  
14 have to agree before it's strong evidence or is that  
15 sort of a --- I don't know how to say it. What do you  
16 think?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I think with respect to  
19 this case, that organizations can, you know, weigh in on  
20 the evidence there to see --- I mean, there is just a  
21 lot of injury within sport that happens, right, it's  
22 just part of sport. So I think they would have to  
23 really consider the evidence to see if there are safety  
24 concerns for having transathletes participate.

1 BY ATTORNEY TRYON:

2 Q. Do you think in high school that every sport  
3 should have a different rule of when transgender girls  
4 can participate in those specific girls sports?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: You know, I just come back  
7 to my expertise and why I've been asked to be on this  
8 case is just to address the benefits that athletes  
9 receive from participating in sport. So I wouldn't  
10 perceive that they are at the high school level. There  
11 is different rules for every sport, but I don't know  
12 where we will be down the road, right, as we just figure  
13 all this out and strive to include all athletes.

14 BY ATTORNEY TRYON:

15 Q. So you don't know what the rules should be?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: Right, I'm not the best  
18 person to make those decisions. I think we need people  
19 who are studying these issues, and that is beyond my  
20 expertise.

21 BY ATTORNEY TRYON:

22 Q. Fair enough. I don't want you to go beyond your  
23 expertise. Well, let me ask you just some related  
24 questions. And you may say the same thing on this, but

1 I'm going to ask you and we will see if you have any  
2 thoughts. You may have already answered this, but let  
3 me ask you these. On what teams should student athletes  
4 participate on if they are transgender? If they are a  
5 transgender girl, should they participate on boys or  
6 girls teams?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: I think it depends what the  
9 rules are, but, you know, over the last decade across  
10 organizations, organizations have found a way to allow  
11 transgender females to participate.

12 BY ATTORNEY TRYON:

13 Q. And those rules have changed over time, right?

14 A. They do.

15 Q. NCAA just changed its rules, right?

16 ATTORNEY VEROFF: Objection.

17 BY ATTORNEY TRYON:

18 Q. Did you answer?

19 A. You know, I'm not sure of the latest. I thought  
20 they were going to leave --- yeah, they're going to be  
21 looking at other options and getting feedback from the  
22 governing bodies is my understanding.

23 Q. Are you aware of what the Rugby Association  
24 says?

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: No.

3                    BY ATTORNEY TRYON:

4            Q.        Are you aware of USA Swimming, what their rules  
5            are?

6                    ATTORNEY VEROFF: Objection.

7                    THE WITNESS: I couldn't tell you all the  
8            details, but I know USA Swimming really is trying to  
9            find a way to be inclusive, and so I know at the youth  
10           levels that transgender youth are able to participate,  
11           right, and that they have allowed some rule changes for  
12           what swimsuit kids wear and things like that.

13                  BY ATTORNEY TRYON:

14            Q.        But those transgender girls have to --- or  
15            transgender women have to meet certain requirements  
16            before they can participate on a female team.

17                    Right?

18                    ATTORNEY VEROFF: Objection.

19                    THE WITNESS: Yes.

20                  BY ATTORNEY TRYON:

21            Q.        Are you aware of the specifics?

22            A.        No. I've read some of this, but I'm not sure  
23            I've retained it and it's not something that I spent a  
24            long time on across sports.

1 Q. Okay.

2 Let me ask you then if you have ever heard of  
3 the term nonbinary?

4 A. I have heard of that term.

5 Q. Is this a fair definition, that it is people who  
6 do not describe themselves or their genders as fitting  
7 in the category of man or woman? Does that sound like a  
8 fair definition?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Yes.

11 BY ATTORNEY TRYON:

12 Q. Should a biological male who identifies as  
13 nonbinary who is an athlete participate in high school  
14 on the boys or girls team?

15 ATTORNEY VEROFF: Objection.

16 THE WITNESS: I think it depends on what  
17 the rules are. And I think the goal of the sport  
18 organizations seems to be how can we look at these  
19 issues and just still try to be as inclusive as  
20 possible.

21 BY ATTORNEY TRYON:

22 Q. What are the rules on that in high school?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Right, it seems to vary

1 across states.

2 BY ATTORNEY TRYON:

3 Q. Do you know of any rule --- do you know of any  
4 rule that specifically addresses nonbinary athletes?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: No.

7 BY ATTORNEY TRYON:

8 Q. Have you heard the term bigender?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Yes.

11 BY ATTORNEY TRYON:

12 Q. The definition that I have read is a person who  
13 identifies as bigender has two genders. Is that your  
14 understanding as well?

15 ATTORNEY VEROFF: Objection.

16 THE WITNESS: Yes.

17 BY ATTORNEY TRYON:

18 Q. And in high school the biological male  
19 identifies as bigender and wants to participate on a  
20 girls sports team, should that be allowed?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: I think greater context is  
23 needed. There's a --- you know, understand what's going  
24 on with that particular athlete. And again, I just want

1 to --- this is a little bit beyond my expertise and I'm  
2 here to just reenforce that there is a lot of benefits  
3 for all athletes to be able to participate.

4 BY ATTORNEY TRYON:

5 Q. What if a biological male wants to be on a girls  
6 team, even though he does not identify as a girl, should  
7 he be allowed to do so?

8 ATTORNEY VEROFF: Objection.

9 THE WITNESS: No.

10 BY ATTORNEY TRYON:

11 Q. And why not?

12 A. Because he's wanting to play on a --- on a  
13 female team and he doesn't --- hasn't transitioned and  
14 isn't identifying as a female.

15 Q. If a biological male wants to participate on a  
16 girls team and identifies as a female but has not  
17 transitioned in any way, should he be allowed to  
18 participate on the girls team?

19 ATTORNEY VEROFF: Objection.

20 THE WITNESS: In --- in general I would  
21 say no, but we're missing the context. What if this was  
22 --- yeah, I think we want that person to transition.

23 BY ATTORNEY TRYON:

24 Q. Okay.



1           What transitioning would be necessary?

2                   ATTORNEY VEROFF:   Objection.

3                   THE WITNESS:   I think that's out for  
4   debate, discussion, and to figure out at these different  
5   levels of sports what that criteria is going to be.

6   BY ATTORNEY TRYON:

7           Q.       So in high school is it simply changing your  
8   name to a female name, would that --- for a male to  
9   change to a female name, would that be adequate to then  
10   be allowed to play on the girls team?

11                   ATTORNEY VEROFF:   Objection.

12                   THE WITNESS:   No, I'd say in general that  
13   wouldn't be the case.

14   BY ATTORNEY TRYON:

15           Q.       Okay.

16                   If that person, in addition to changing his  
17   name to a female name and says I want to be addressed  
18   using female pronouns, is that adequate?

19                   ATTORNEY VEROFF:   Objection.

20                   THE WITNESS:   I think that we've got this  
21   kind of continuum it sounds like, right, to what degree  
22   people are transitioning to know transitioning. And to  
23   just have a blanket statement that no one --- that no  
24   transathlete can ever participate in sport ever across

1 the universe is harmful for many athletes, right. And  
2 so these specifics of where we are going to go with what  
3 the criteria is for athletes, right, I think there's a  
4 lot of people studying these issues and weighing in and  
5 I'm not one of those individuals who's really studying  
6 this stuff in detail at that level, but I do know ---.

7 BY ATTORNEY TRYON:

8 Q. Sorry. Go ahead.

9 A. I do know that inclusion in sport has many  
10 benefits and that it would be a shame to not hold a  
11 category of athletes out to participate.

12 Q. So there would be nothing to stop a male  
13 athlete, a biological male athlete identifying as a  
14 female from participating on a boys team, right?

15 ATTORNEY VEROFF: Objection.

16 THE WITNESS: Right. I did not state  
17 that. I'm not sure what that criteria should be, but it  
18 helps us balance, being inclusive and also being fair.

19 BY ATTORNEY TRYON:

20 Q. So it's not excluding that person from  
21 participating in sports, it's just excluding that person  
22 from participating on the team that person wants to  
23 participate on, right?

24 ATTORNEY VEROFF: Objection.

1                   THE WITNESS: If we understand that  
2 transathletes are identifying with a particular gender,  
3 so in this case transfemales, then no, that wouldn't be  
4 an option to go participate on a male team.

5 BY ATTORNEY TRYON:

6           Q. Well, why is that not an option?

7           A. Right, well, I just point to PBJ, right, who has  
8 identified as a girl for a long time and looks very much  
9 like a girl and is the --- I believe the principal said,  
10 you know, we're just creating problems. This little  
11 girl can be with her friends, can run cross-country, can  
12 reap all these benefits, right, and it's not an option  
13 to send her over to the boys team because she is a girl.

14          Q. Do you need to look like a girl to be on the  
15 girls team?

16                   ATTORNEY VEROFF: Objection.

17                   THE WITNESS: No, I'm not sure what that  
18 means.

19 BY ATTORNEY TRYON:

20          Q. Well, there are girls that look masculine that  
21 are girls and they, of course, want to be on the girls  
22 team. I would presume you would agree they should be on  
23 the girls team, right?

24                   ATTORNEY VEROFF: Objection.

1                   THE WITNESS: Right, there are --- you  
2 know, we may get into a debate about what is masculine  
3 or feminine if we're saying that --- you're describing  
4 somebody as more --- a female that's more masculine, but  
5 maybe other people see it that there's a feminine  
6 quality to whatever, being strong, yeah, having a solid  
7 build, those things.

8                   BY ATTORNEY TRYON:

9           Q.       Well, you're the one that pointed out that BPJ  
10 looks like a little girl and suggesting that that was  
11 one of the reasons that BPJ should be on the girls team.  
12 Did I understand that incorrectly?

13          A.       What, I meant to emphasize is that she sees  
14 herself as a girl, and so we put her in a really  
15 uncomfortable spot to say you can't be with the girls  
16 and you have to go be with the boys even though in your  
17 heart of hearts you know you're a girl.

18          Q.       Can that be uncomfortable for the biological  
19 girls on the girls team if biological boys who identify  
20 themselves as internally as being girls are allowed to  
21 participate on the girls team?

22                   ATTORNEY VEROFF: Objection.

23                   THE WITNESS: Could --- you know, could  
24 the fact that a transgender girl is participating in a

1 sport, on a team, could that make someone feel  
2 uncomfortable? Definitely it's possible.

3 BY ATTORNEY TRYON:

4 Q. Not only is it possible, but it happens, right?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: Yes, I think it probably  
7 happens. It probably happens both ways, that there are  
8 also teammates that are very supportive.

9 BY ATTORNEY TRYON:

10 Q. But the feelings of the biological girls who are  
11 uncomfortable with a biological male identifying as a  
12 female or a transgender girl, as you have said, their  
13 feelings are important too, right?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: You know, pulling from my  
16 expertise, if we're trying to create this caring task  
17 involving climate, then yes, it would be very important  
18 for a coach to sit down with those athletes and talk and  
19 encourage them. If the transfemale athlete is playing  
20 by the rules and has done everything that has been asked  
21 and they are part of a team, then coaches should really  
22 talk with the athletes than help them understand, help  
23 them not let this be a distraction, help them embrace  
24 all their teammates, right. There is so much in the

1 sport that any of us on a team might like to change,  
2 right, or wish our teammates did other things, right,  
3 wish they worked harder or wish they used less  
4 recreational drugs or anything, right, but we are a team  
5 and we come together and we just support each other and  
6 we keep the focus on being the best we can be every day.

7 BY ATTORNEY TRYON:

8 Q. So biological girls just need to knuckle under  
9 and accept things the way that you want them to be. Is  
10 that what you are saying?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I'm saying being part of a  
13 team is challenging, and for some people having a  
14 teammate that is transgender may be one of those  
15 challenges they have to deal with. But everyone is  
16 dealing with challenges with the teams, right. And if  
17 that transgender athlete is there playing by the rules,  
18 right, and is allowed to be there, then yeah, I guess  
19 the others have to deal with it.

20 BY ATTORNEY TRYON:

21 Q. So on the other hand, you can tell that  
22 transgender female to participate on the boys team and  
23 the coach on the boys team would sit down with the boys  
24 and say you will not make fun of this child, you accept

1 this child as one of our own even though this child is a  
2 transgender female, this transgender female will be on  
3 the boys team and you will treat this transgender female  
4 with respect and be a full part of the team, right, that  
5 coach could do that?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: Yes, the problem is that the  
8 transgender athlete is a female, right, and has the  
9 right to participate with the female team.

10 BY ATTORNEY TRYON:

11 Q. Where is that right found? You just said she  
12 has that right. Where is that right?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: I mean as it comes within  
15 the rules, right. I'm sorry, Julie. I mean, as it  
16 falls within the rules, right.

17 BY ATTORNEY TRYON:

18 Q. Well, right now the rule is HB-3293, which says  
19 that that transgender girl must participate on the boys  
20 team. And since that is the rule, following your ---  
21 your logic, you go to the boys team and the boys coach  
22 and you say this child is going to be participating in  
23 this team, you will welcome her with open arms onto our  
24 team just as we do on football, we open with --- welcome

1 with open arms girls who are playing on a boys football  
2 team, right?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: My understanding in this  
5 case is that the judge is --- has kind of looked at the  
6 evidence and said right now I think there is potential  
7 discrimination and so we're going to let BPJ continue to  
8 compete and all through this so ---.

9 BY ATTORNEY TRYON:

10 Q. That's right, the Judge did say that for now,  
11 but he did not say that for everything. But I'm asking  
12 for a more general rule. Putting aside BPJ, as a  
13 general rule, why would you say coach of the boys team,  
14 you will allow these transgender girls to come and play  
15 on your team and you will welcome them with open arms  
16 just as we do with our football teams that allow girls  
17 to play on them?

18 ATTORNEY VEROFF: Objection.

19 BY ATTORNEY TRYON:

20 Q. Because after all, as you said, the transgender  
21 girl is a girl and so should be allowed to play on the  
22 boys team if she chooses?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: I think football is a great



1 sport, and I wish they had male and female teams.  
2 Typically, it's just a male team, so a female who wants  
3 to play football doesn't have another option. But in  
4 this case BPJ and others who identify as a female and  
5 should be able to compete with other females, their  
6 friend group and --- so I see that as an indifference.

7 BY ATTORNEY TRYON:

8 Q. Their friend group? So girls can't have boy  
9 friends?

10 A. No. I meant it --- sorry, I meant in this case  
11 BPJ is saying her closest friends are on the girls team.  
12 She is a girl and she --- and so it would be harmful,  
13 not fair to not let her compete with that team.

14 Q. How do you define fair? You told me before you  
15 are not an expert on fairness. Are you now saying that  
16 you do know what is fair?

17 ATTORNEY VEROFF: Objection.

18 THE WITNESS: I'm just keeping focused on  
19 what the rules are and the Judge has ruled right now  
20 that BPJ should be able to compete with the girls  
21 because she is a girl, and so from my perspective,  
22 that's where it stands right now.

23 BY ATTORNEY TRYON:

24 Q. Okay.

1           That's just because that's what the Judge said  
2 then, right?

3                     ATTORNEY VEROFF: Objection.

4                     THE WITNESS: No. I think the core issue  
5 is BPJ identifies as a girl, has lived the majority of  
6 her life as a girl and wants to be able to participate  
7 in her school activities as a girl, including  
8 cross-country.

9           BY ATTORNEY TRYON:

10          Q.       So how long do you think a transgender girl has  
11 to live as a girl before participating on the girls  
12 team?

13                     ATTORNEY VEROFF: Objection.

14                     THE WITNESS: Again, I think I'm not the  
15 best person for that line of inquiry. I'm not sure, but  
16 I know others are studying that, those kind of issues,  
17 and can add greater insight to it.

18           BY ATTORNEY TRYON:

19          Q.       Okay.

20          A.       I'm just someone who would hate to see BPJ not  
21 be allowed to participate in her school activities, just  
22 to be told no, I'm sorry.

23          Q.       On the girls team?

24          A.       Right.

1 Q. And of course, not all athletes compete on  
2 teams. Sometimes if they just love to run, if that is  
3 the key, they just love to run, they don't have to be on  
4 a team to run, right?

5 A. Right.

6 ATTORNEY TRYON: So we have gone for an  
7 hour. And I would like to get some documents printed  
8 since we're not able to easily look at them on your  
9 iPad. So why don't we go off the record to see if we  
10 can get that taken care of. Is that okay with you,  
11 Julie?

12 ATTORNEY VEROFF: That is great. Thank  
13 you.

14 VIDEOGRAPHER: Going off the record. The  
15 current time reads 3:15 p.m. Eastern Standard Time.

16 OFF VIDEOTAPE

17 ---

18 (WHEREUPON, A SHORT BREAK WAS TAKEN.)

19 ---

20 ON VIDEOTAPE

21 VIDEOGRAPHER: We are back on the record.  
22 The current time reads 3:37 p.m. Eastern Standard Time.

23 BY ATTORNEY TRYON:

24 Q. Professor Fry, thank you for helping us with

1 that technical issue.

2 A. No problem.

3 Q. I would like you to find the exhibit that says  
4 Depression in Athletes. It should be Exhibit-8, I  
5 believe.

6 A. I've got it.

7 Q. Okay.

8 I've lost you. There you are. Okay. Let me  
9 find the right page I'm outlining to. Okay. So Exhibit  
10 8 is Depression in Athletes: Prevalence and Risk  
11 Factors by Andrew Wolanin and other authors, right?

12 A. Yes.

13 Q. So I wanted to ask you about a passage on the  
14 second page of this, which is page 57, under the title  
15 Sports Injuries and Depression at the bottom of the  
16 first column. So I will just read the passage that I  
17 have a question about and if you choose to read it, too,  
18 if you want to read it more --- in fact, did you already  
19 read the abstract on this earlier?

20 A. I just did.

21 Q. Okay.

22 So you've read the abstract. My question is  
23 on, as I said, under Sports Injuries and Depression.  
24 And I will just read into the record, Bruer and Petrie,

1 seven in parentheses, were among the first researchers  
2 to compare depression symptoms between athletes who had  
3 and had not experienced injuries. In this retrospective  
4 study it was found that athletes who experienced an  
5 injury during the previous year reported significantly  
6 higher depression symptom scores than those reported by  
7 non-injured athletes, as measured by the Validated  
8 Center for Epidemiological Studies Depression,  
9 parentheses, CES-D scale. Do you see that?

10 A. I do.

11 Q. And my question is do you have any reason to  
12 dispute this or contest this finding in this statement?

13 A. No.

14 Q. Would it be fair to say that you agree with it?

15 A. You know, it's retrospective, so they're going  
16 back in time and asking, hey, when you were injured what  
17 was going on, but no, I would accept this is --- could  
18 be a legitimate finding.

19 Q. Okay.

20 Then in the next column, first full paragraph,  
21 there has been a recent surge of evidence suggesting  
22 that sports concussions can lead to changes in emotional  
23 state, parentheses, 14, closed paren, period.  
24 Furthermore, there is recent evidence to suggest that

1 sports concussions can have long-lasting emotional  
2 impact. And my question is, do you have any reason to  
3 contest this statement? And feel free to look at it and  
4 make sure I'm not reading it out of context.

5 A. No, I don't contest this.

6 Q. Then in the beginning of the last full paragraph  
7 on the page it says, while the relationship between  
8 concussion and depression may be significant there is  
9 also evidence to suggest that a concussion may have the  
10 same effect as other injuries on mental health. For  
11 example, Main Wearing, et al., 18 in parentheses,  
12 conducted a study to examine the differences between  
13 emotional responses in athletes who had a concussion  
14 compared with anterior cruciate ligament, ACL, injury.  
15 They found that athletes with ACL injuries had more  
16 severe levels of depression and longer duration of  
17 depression compared to those athletes with concussion.  
18 Do you see that?

19 A. I do.

20 Q. And do you have any reason to contest that  
21 statement?

22 ATTORNEY VEROFF: I'll just object to the  
23 extent this statement relies on a study that is actually  
24 not before the witness.

1 BY ATTORNEY TRYON:

2 Q. Go ahead, you may answer.

3 A. Okay.

4 You know, there is probably just a lot of  
5 background to this, so I agree. I haven't read this one  
6 but I would jus say ACL injuries can be extensive and  
7 last over months, right, and take an athlete out of  
8 sports for months. Whereas a concussion, you know, it  
9 varies in severity and somebody might be back relatively  
10 quickly in comparison. But, you know, both of --- both  
11 of these injuries are not fun for athletes to deal with  
12 and, yeah, can cause stress and depression.

13 Q. Okay.

14 So I think you would agree that it's important  
15 for athletes to avoid injuries where possible, right?

16 A. Right, right, and --- yeah.

17 Q. And would you agree that it is important to have  
18 rules in place to avoid injuries where possible?

19 A. Yes, I would agree.

20 Q. And would you agree that we don't need to wait  
21 for actual harm before putting rules in place to prevent  
22 harm if it's reasonably foreseeable?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Yeah, the keyword is

1 reasonably.

2 BY ATTORNEY TRYON:

3 Q. Right. So you agree with that but focusing on  
4 the word reasonably, right?

5 ATTORNEY VEROFF: Objection.

6 THE WITNESS: Right.

7 BY ATTORNEY TRYON:

8 Q. Would you agree that segregation of male and  
9 female sports is at least in part to protect girls from  
10 injury, at least for some sports?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: Possibly. I would just  
13 note that there is tremendous variability within each  
14 gender and if that were totally what was driving this  
15 then we really would be concerned about some, for  
16 example, not as strong males competing against bigger,  
17 stronger males and same with females. So the issue just  
18 transcend gender, you know, it's an issue within each  
19 gender.

20 BY ATTORNEY TRYON:

21 Q. Well, you said you had some familiarity with  
22 Title 9, right?

23 A. Yes.

24 Q. And Title 9 divides sports into boys --- male



1 and female sports in some instances, right?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Yes.

4 BY ATTORNEY TRYON:

5 Q. And in particular, with respect to contact  
6 sports, right?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Yes.

9 BY ATTORNEY TRYON:

10 Q. And would it be fair to say that those contact  
11 sports Title 9 does that specifically to --- for safety  
12 purposes?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: I think it's fair to say  
15 that that is a --- is a concern, yeah.

16 BY ATTORNEY TRYON:

17 Q. You wouldn't say that Title 9, the regulations  
18 for Title 9 that regulate that, do you think those are  
19 unfair or should be determined to be illegal?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: Right, no.

22 BY ATTORNEY TRYON:

23 Q. So let's go back to the study by --- I will say  
24 it wrong, in Balaguer?

1 A. Yes, Balaguer.

2 Q. Balaguer, thank you. Do you speak French?

3 A. No, but she is one of my favorite people in the  
4 world.

5 Q. Oh, okay.

6 VIDEOGRAPHER: Counsel help me out here,  
7 which exhibit number is that?

8 THE WITNESS: Maybe 2.

9 ATTORNEY TRYON: No, the Balaguer.

10 VIDEOGRAPHER: If you can tell me the  
11 title I can tell you the number.

12 ATTORNEY TRYON: I'm sorry.

13 VIDEOGRAPHER: I said if you can tell me  
14 the title I can tell you the number.

15 ATTORNEY TRYON: Here it is. I think it  
16 is number 7, Motivational Climate and Goal Orientation  
17 as predictors of Perceptions.

18 VIDEOGRAPHER: Correct, that would be  
19 Number 7.

20 BY ATTORNEY TRYON:

21 Q. And is that printed out for you, Professor Fry?

22 A. Yes.

23 Q. And going back in the report --- let me see if I  
24 can find the right paragraph. Here we go, paragraph 32

1 of your most recent report. Okay. So the first clause  
2 of that first sentence says athletes high in ego  
3 orientation report lower companionship and greater  
4 conflicts with teammates and you cite Balaguer for that  
5 proposition. I simply was not able to find that  
6 proposition in the Balaguer report. By the way, the  
7 University of Valencia, where is that? Is that in  
8 Spain?

9 A. It is.

10 Q. Then why does Elizabeth have a French name? I'm  
11 sorry. If you could just look through and tell me if  
12 you can see the language that supports your language in  
13 paragraph 32.

14 A. Yeah, yeah, just one more second. Yeah, okay.  
15 They give you this. I think this wasn't the best  
16 article. It was referring to the coach instead of the  
17 teammates with this one. But if you would look on ---  
18 or maybe --- 383, that paragraph in the middle of the  
19 first column. Yeah, just a little bit lower. But the  
20 wording in this paragraph on the left, yeah, if you can  
21 fit the whole thing in again. Right. So partway down  
22 it's just asking about --- to write your current coach  
23 or somebody that --- so one would be just doesn't  
24 coincide at all with the coach I would like to have

1     versus my ideal coach. So the lower rating on the coach  
2     is just --- that is not a good thing when you're going  
3     this is not the coach that I want, right, or all the way  
4     up to this is my ideal coach. So it supports the  
5     findings that relationships aren't that strong, but it  
6     is not the best study --- or you know, it shouldn't have  
7     been slotted there because it's just referring to the  
8     coach instead of the athletes. If you look at that  
9     table underneath where we're looking now, Table 2.

10    BY ATTORNEY TRYON:

11       Q.     I'm looking at it.

12       A.     Whoops, is that it. Under satisfaction and so  
13     the middle part on the left and the bottom one,  
14     satisfaction with the coach, you can just see that the  
15     more you perceive a task climate, the more you are  
16     thinking this is the ideal coach, I'd like to have, the  
17     more respect I have for the coach, or however you want  
18     to put that in your words and the more you perceive an  
19     ego climate the less and the more on the task  
20     orientation, you are more likely to just say this is a  
21     coach I'm glad I have. And with the ego orientation,  
22     it's just not significant --- so anyway, it supports  
23     the results for saying overall, but that was not the  
24     best reference there. It shouldn't have been used right

1 there.

2 Q. So just to make sure I understand then, the  
3 Balaguer report does not actually support the idea that  
4 athletes high in ego orientation report lower  
5 companionship and greater conflict with teammates,  
6 right?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Right.

9 BY ATTORNEY TRYON:

10 Q. Do you believe Smith and Small does?

11 A. Yeah. You know, a little while ago when we were  
12 looking at that passage, it just included like ten  
13 variables that were cognitive anxiety and worry and  
14 concentration disruption and I don't know, five other  
15 things, a lot of ways to measure stress. And so across  
16 these studies a lot of ways that these relationships  
17 with coaches and athletes, but it's not like everyone is  
18 using one uniform measure. Yeah, so there's probably  
19 more studies showing that you have better relationships  
20 when people perceive a task involving climate or have a  
21 task orientation and then it's kind of a mix on the ego  
22 side. So sometimes that comes out and sometimes it  
23 doesn't.

24 Q. Don't studies show that the best mix is a high

1 ego orientation and a high task orientation?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: No, I wouldn't agree with  
4 that, that mixes --- it's not necessarily that that is  
5 harmful, right, having a high task and high ego. But to  
6 say it is the best, no, I wouldn't say that.

7 BY ATTORNEY TRYON:

8 Q. Is Smith and Small cited in the bibliography?

9 A. One of their articles by Grossbar is, but that  
10 is looking more at the orientations in climate. That  
11 one, I lost that page. I was just trying to see if  
12 there was another one. There is one by Cummings, 2007,  
13 Is Winning Everything, the Contributions of Climate  
14 and ---.

15 Q. And that is going to tell me that --- is going  
16 to support the statement that ego orientation creates  
17 more conflict?

18 A. No, no. I'm not sure. I think I'd have to step  
19 back and review to tell you for sure what those are, but  
20 I can certainly do that.

21 Q. All right.

22 Well, let's move on. I don't want to keep you  
23 here any longer than we need to be here.

24 A. Thank you. I appreciate that.

1 Q. You bet. So let me redirect your attention to  
2 paragraph 39. So in the last --- let's see, the  
3 sentence that says because these positive benefits are  
4 fostered in task involving environment, arbitrary  
5 exclusions can cause harm not only to the athletes who  
6 are excluded but also to the other athletes on the team.  
7 Can you tell me what harms it causes to other athletes  
8 on the team?

9 A. It could cause harm to athletes who aren't  
10 allowed to have their --- their friends participate,  
11 their friends who should be on the team, right, if ---  
12 BPJ was not allowed to participate and her friends  
13 really were looking forward to that being a part of the  
14 sport, right. The sport experience is to share that  
15 together. That could be harmful. It is also just, you  
16 know, it could be a missed opportunity to --- for kids  
17 to learn and to grow and to become more familiar and to  
18 become more accepting, right.

19 Q. So if that's the case, couldn't the coach just  
20 say to them I know you would like to have your friend on  
21 the team, but that's not the way it works and help them  
22 work through that, just as you told me the coach can  
23 counsel kids who disagree with the decisions --- some  
24 other decisions?

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: Okay.

3                    Definitely a coach could do that, but  
4                    that doesn't change the fact that --- that it could be  
5                    harmful in the sense that knowing that other people you  
6                    care about and evaluate are being excluded in an unfair  
7                    way.

8                    BY ATTORNEY TRYON:

9                    Q.        And that term, the unfair way, is something that  
10                    you said that you are not an expert on what's fair and  
11                    what's unfair, right?

12                    A.        Right. I said it's not a primary area of study,  
13                    right.

14                    Q.        Yeah. Well, I want to ask you a question. I  
15                    think you're referring to the Plaintiff as PBJ, with  
16                    first letter being P.

17                                Am I hearing you right?

18                    A.        I didn't think so. But it does --- but BPJ.  
19                    Sorry.

20                    Q.        All right. I want to make sure we're all saying  
21                    the correct initials.

22                    VIDEOGRAPHER: Excuse me, Counsel. If I  
23                    could interrupt for a second. If I could just ask the  
24                    witness to kind of sit up. You're starting to slouch



1 down and your head is getting cut off in the video.

2 Thank you.

3 THE WITNESS: All right. Sorry about  
4 that.

5 BY ATTORNEY TRYON:

6 Q. You're not saying that any West Virginia sports  
7 organization or educational education has adopted an  
8 ego-promoting philosophy, are you?

9 A. I'm not.

10 Q. And you don't know of any coaches in West  
11 Virginia that have either, right?

12 ATTORNEY VEROFF: Objection.

13 THE WITNESS: No.

14 BY ATTORNEY TRYON:

15 Q. And a team can build a task oriented climate  
16 with sports separated by sex, right?

17 A. That's right.

18 Q. Do you know if female teams are better at  
19 building task oriented climates than boys teams or vice  
20 versa?

21 A. Yeah. It's possible to build a strong task  
22 involving caring climate in both teams with males and  
23 females. There may be a slight tendency across some  
24 studies where those scores come out a little bit higher

1 for females than males, but it's not consistent, right,  
2 but females sometimes really value that --- those social  
3 aspects of the sport. Not that males don't, but maybe a  
4 slightly higher --- if we're looking at those bell  
5 curves again, they would be really close, but it's  
6 possible that for --- if we are looking at guys they  
7 might come out a little bit higher on the ego aspects of  
8 the climate and females the task.

9 BY ATTORNEY TRYON:

10 Q. Can we look at paragraph 41 of your report,  
11 please?

12 A. Yes.

13 Q. So you say the climate of youth sports must be  
14 geared to include all participants, so that teams are  
15 more likely to help every athlete maximize their  
16 potential. Now, the word must is a mandatory word,  
17 right?

18 A. Yeah. I think it means must in the sense that  
19 that's our aim, to maximize the potential of every  
20 athlete. If that's our aim, then it is pretty key to  
21 creating that climate.

22 Q. So who would be the --- what entity would be the  
23 one to enforce that?

24 ATTORNEY VEROFF: Objection.

1                   THE WITNESS: Right, I think it comes  
2 down to a matter of administrators in sport leagues and  
3 having a desire to provide coaching education, try to  
4 help coaches understand this research and to help foster  
5 caring and task involving climate.

6 BY ATTORNEY TRYON:

7           Q.       Are you suggesting there should be a statewide  
8 or nation-wide rule on this?

9           A.       No.

10                   ATTORNEY VEROFF: Objection.

11                   THE WITNESS: No, I'm not suggesting.  
12 I'm sorry, Julie.

13                   ATTORNEY VEROFF: That is quite okay. Go  
14 ahead.

15                   THE WITNESS: No, I'm not suggesting  
16 that, although I would just note that Canada has a basic  
17 coaching education for anyone who is going to work with  
18 even very young athletes, right, and then they have  
19 these different levels that people need to go through  
20 this coaching education because they really value trying  
21 to help create inclusive environments that help kids  
22 focus on their effort and improvement and can be set up  
23 in a way to bring out the best in any child.

24 BY ATTORNEY TRYON:

1 Q. So what you said in Canada, they have this, who  
2 has this?

3 A. I believe it kind of trickled down from the  
4 government, that they just said --- you know, in the  
5 States, in the U.S., our model is if you have a  
6 heartbeat, right, and you're willing, let's put you with  
7 a team because we just want --- want to have as many  
8 teams and neighborhoods where kids can participate. But  
9 in Canada they just set the bar higher and they said if  
10 you're going to work with kids, we want you to have some  
11 basic coaching education. And so it's just a rule  
12 across their sort of sporting government.

13 BY ATTORNEY TRYON:

14 Q. You say sporting government. Are you saying the  
15 national government is doing this or some sporting  
16 organization? I don't know much --- anything about  
17 Canada as far as that is concerned.

18 A. Yeah. You know, I would have to look at that  
19 more closely. Definitely their sporting organizations,  
20 but I'm not sure that doesn't trickle down from some of  
21 their government rules, but I won't say that for the  
22 record. For the record, I'll just say that they do  
23 require any use for a coach to have a basic introduction  
24 to coaching education, which would include some of these

1 concepts.

2 Q. But you're not advocating that for the United  
3 States, are you?

4 A. No.

5 Q. Okay.

6 Let's see, so my next question is you say so  
7 that teams are more likely to help every athlete ---  
8 I'm sorry, strike that.

9 Still that first clause. The climate of youth  
10 sport must be geared to include all participants. So  
11 who gets to participate? When you say all participants  
12 what do you mean by that?

13 A. Hopefully, we have an avenue for all young  
14 people to gain some exposure to youth sport, so all  
15 athletes who want to.

16 Q. Okay.

17 So in some sports and high school athletes and  
18 in college you have tryouts. And if you don't make the  
19 tryouts, you don't make the team.

20 Right?

21 A. That's right.

22 Q. And do you think that's okay or do you think  
23 that we should do away with tryouts and everybody should  
24 be on the team if they want to be on the team?

1                    ATTORNEY VEROFF: Objection.

2                    THE WITNESS: I think there is a lot of  
3 benefits to looking at high school sports and including  
4 as many athletes as we can. But no, I wouldn't say that  
5 I'm against all --- everywhere we should have a no cut  
6 policy. But I think it's valuable to look and say, hey,  
7 are we including as many kids as we can. Because the  
8 evidence supports that kids feel more connected at  
9 school, you know, their attendance is better. There's a  
10 lot pluses when kids get that opportunity to  
11 participate.

12 BY ATTORNEY TRYON:

13            Q.        Don't sports sometimes take kids away from their  
14 academics?

15                    ATTORNEY VEROFF: Objection.

16                    THE WITNESS: They sometimes do for some  
17 kids.

18 BY ATTORNEY TRYON:

19            Q.        For a lot of kids, isn't it?

20            A.        I'm not sure what the percentages are, but yeah,  
21 some kids may be less focused on academics.

22            Q.        And that is why a lot of schools actually have  
23 rules on minimum academic scores that you are getting in  
24 order to be on a team, right?

1 A. Probably so, yes.

2 Q. So going back to cutting kids off teams, that's  
3 a thing where kids, if they don't perform at a certain  
4 level, they're cut from the team or never allowed onto  
5 the team, right?

6 A. Right.

7 Q. And so if somebody does better than you on that  
8 team, then you are at a disadvantage, right?

9 ATTORNEY VEROFF: Objection.

10 BY ATTORNEY TRYON:

11 Q. If you are cut from the team?

12 A. Yes.

13 Q. Now, you say from an educational standpoint it  
14 is optimal to encourage all athletes to do the best they  
15 can and to help all athletes enjoy the sport they love,  
16 right?

17 A. Uh-huh (yes). Yes.

18 Q. So when you say from an educational perspective  
19 let me just ask you --- do you feel like you are an  
20 expert on education or teaching methodology?

21 A. It depends. When I say an educational  
22 perspective I mean from the sports psychology  
23 literature. And you know, it's not what I study in ---  
24 sorry, I'm just going to think for a second.

1 Q. Take your time. I want to get an accurate  
2 answer from you. I'm not trying to fool you or  
3 anything.

4 A. Thank you. Yeah, I think this is building on  
5 achievement goal perspective theory that just as we  
6 should be helping all kids be the best that they can be,  
7 right, and if we're not doing that, then we're more  
8 likely setting it up to just focus on those kids who we  
9 think are going to be the best and the highest  
10 achievers, but to keep the focus on helping every  
11 athlete, every student, be the best that they can be I  
12 think is really a valuable aim.

13 Q. Do you know how many schools in West Virginia  
14 have sports programs?

15 A. I do not.

16 Q. Do you have any idea of what percentage of kids  
17 are in athletic programs in West Virginia schools?

18 A. I don't.

19 Q. Do you know about in any of the universities in  
20 West Virginia?

21 A. No, I don't know.

22 Q. Take a look at paragraph 42. Read that. I'm  
23 not going to read it all out loud, but I do have some  
24 questions for you about paragraph 42.



1       A.       Okay.   Okay.

2       Q.       As far as I can tell, this paragraph has nothing  
3 to do with House Bill 3293, does it?

4                   ATTORNEY VEROFF:   Objection.

5                   THE WITNESS:   I think it takes a bigger  
6 picture perspective of just the youth sport world, and  
7 so what's true for parents, for this parent, Jim  
8 Thompson, who had a child who experienced so much  
9 negative, you know, interactions when he first signed up  
10 for sport, that Jim Thompson was like, wow, this is  
11 crazy, and he went on to start this organization to  
12 provide coaching education for --- you know, for  
13 coaches.   He has materials for parents, for officials,  
14 but you know, reading it, it makes me think it would be  
15 healthy for all of us to step back and just say, hey,  
16 let's not get too, too over crazy about this, right.  
17 And in the case of BPJ, right, how cool if we can let  
18 her have the experience of running cross-country school  
19 and wouldn't it be a shame if we just had a blanket  
20 exclusion of kids based on their gender identity.

21                   BY ATTORNEY TRYON:

22       Q.       Okay.

23                   But what does that have to do with HB-3293?

24                   ATTORNEY VEROFF:   Objection.

1                   THE WITNESS: You know, it's probably  
2 just a matter of how we interpret this, but if we --- if  
3 we have legislators just making a blanket decision that  
4 across our state no child in secondary education, no  
5 athletes in universities who are transathletes can  
6 participate, it feels like we are really doing a  
7 disadvantage to those athletes and not allowing them to  
8 participate and reap the benefits. And I think Jim  
9 Thompson here is just saying there is just so many  
10 benefits and what if we were all united and saying how  
11 can we come in and just make sport be all it can be.  
12 Parents play a big role in that, but they're definitely  
13 not the only party that does.

14 BY ATTORNEY TRYON:

15       Q. Is it your position then that a child or youth,  
16 a young adult should be allowed to participate on  
17 whatever team that child identifies as being a gender  
18 associated with that team? That wasn't very artfully  
19 said, so let me try again. Is it your position that any  
20 child that identifies as a girl should be allowed to  
21 participate on a girls team or women's team as the case  
22 may be?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: It's my position that when

1 I look at the sport organizations across this country  
2 and internationally that sport leaders are recognizing  
3 that we want to balance fairness with inclusion and that  
4 there has been success in that already and that that is  
5 something that we can do and that we don't have to just  
6 exclude all trans athletes from participating in sport.

7 BY ATTORNEY TRYON:

8 Q. So you have not answered my question directly.  
9 Is that because you don't want to or because you don't  
10 feel like you can?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I feel like it's more  
13 complex than what you're mapping it out. When we talk  
14 about transathletes and their gender identity and  
15 whether they may be transitioning and all these other  
16 factors, it's just a bigger picture than saying any male  
17 should be able to decide at any moment I want to compete  
18 as a female. No, we have to have guidelines in place  
19 that are fair and inclusive.

20 BY ATTORNEY TRYON:

21 Q. So if we just narrowed down the statute somewhat  
22 to imply with your views on that, then you think it  
23 would be okay to exclude some transgenders ---  
24 transgender girls from competing on girls teams but not

1 all?

2 ATTORNEY VEROFF: Objection.

3 BY ATTORNEY TRYON:

4 Q. Is that right?

5 A. Right. I think that's what's happening right  
6 now, right, there are like criteria within the NCAA, for  
7 example, and athletes have meet that criteria to  
8 participate as a transgender female.

9 Q. And so a statute that did that you would find  
10 okay?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I believe sport  
13 organizations and leaders are going to be able to find a  
14 way to balance inclusion and fairness, and what that may  
15 look like across sports or different levels, yeah, I'm  
16 not an expert on that and couldn't outline all that for  
17 you right now. I could just say it makes me sad when  
18 athletes are excluded and not given a chance to reap all  
19 these amazing benefits from being a part of sport.

20 BY ATTORNEY TRYON:

21 Q. I hear you, but I still want to know if you  
22 believe that there's a place for the State to pass laws  
23 to regulate that?

24 ATTORNEY VEROFF: Objection.

1                   THE WITNESS: Yeah, I don't think the  
2 State legislators in my view are the best position. I  
3 feel like the sport organizations and sport leaders and  
4 people really invested and knowledgeable and involved in  
5 the sports at different levels should be making these  
6 calls.

7 BY ATTORNEY TRYON:

8           Q. So you don't believe that the State should pass  
9 any law whatsoever regulating participation of  
10 transgender girls in girls sports?

11                   ATTORNEY VEROFF: Objection.

12                   THE WITNESS: Yeah, I'm not speaking to  
13 every possible law that could ever be invented, but with  
14 regard to this House Bill, right, I think it's  
15 unfortunate to have just a blanket exclusion for  
16 transathletes, for transfemales.

17 BY ATTORNEY TRYON:

18           Q. Fair enough. What about maybe a --- well, let  
19 me just ask this question. When kids are competing, is  
20 it their identity that's competing or is it their body  
21 that's competing?

22                   ATTORNEY VEROFF: Objection.

23                   THE WITNESS: I'm sorry. I wouldn't even  
24 know where to begin to address that question or what

1 even ---.

2 BY ATTORNEY TRYON:

3 Q. Let me see, you're not an expert on puberty  
4 blockers therapy for boys or young men who want to be on  
5 the girls teams, right?

6 A. I am not.

7 Q. And you're not an expert on testosterone  
8 suppression for boys or young men who wanted to be on a  
9 girls team, right?

10 A. That is correct.

11 Q. And you are not an expert on hormone therapy for  
12 boys or young men who want to compete on girls teams,  
13 right?

14 A. That's correct.

15 Q. Let's take a look at Exhibit-11.

16 ATTORNEY TRYON: Jake, if you could bring  
17 that up. Excuse me, Exhibit-9. I beg your pardon. I  
18 have to relabel some of these.

19 ---

20 (Whereupon, Exhibit 9, Article on Lia  
21 Thomas, was marked for identification.)

22 ---

23 BY ATTORNEY TRYON:

24 Q. So I'm sure you expected that I was going to ask

1 you some questions about Lia Thomas, didn't you?

2 A. I didn't know what to expect, honestly.

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: I didn't know what to  
5 expect.

6 BY ATTORNEY TRYON:

7 Q. Of course, the whole issue with Lia Thomas has  
8 been in the news a lot, and so I want to ask you about  
9 --- this is an article in Fox News. It says Penn  
10 Swimmer Slams School's Handling of Lia Thomas Saga.  
11 They Don't Actually Care about Women at All. So have  
12 you seen this article?

13 A. No.

14 Q. But you are aware of the Lia Thomas what I will  
15 call controversy, right?

16 A. Yes.

17 Q. So the first paragraph says a swimmer on  
18 University of Pennsylvania Women's team says she feels  
19 the school's decision to allow transgender swimmer Lia  
20 Thomas to compete has created an unfair balance within a  
21 sport that prioritizes Thomas's rights over that of  
22 biological female student athletes. A student who spoke  
23 to Fox New Digital on the condition of anonymity out of  
24 fear of retribution said she was hopeful after learning

1 the NCAA's decision last week to update its policies of  
2 allowing transgender girls to compete based on hormone  
3 levels. And then skipping down it says stuff like that,  
4 it's not just the difference between two girls and how  
5 one may have slightly larger lungs that gives them a  
6 slight advantage. These are monumental advantages that  
7 biological males just develop through puberty and it's  
8 not something that a year of hormone treatments, in  
9 brackets, can suppress because they still have all the  
10 muscle mass that they had for the last 20 years, closed  
11 quote. Do you believe that this swimmer is justified in  
12 her feelings about this being unfair?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: I believe this swimmer has  
15 the right to her opinion, for sure.

16 BY ATTORNEY TRYON:

17 Q. Do you agree that it was unfair for Lia Thomas  
18 to compete with the girls on the team?

19 ATTORNEY VEROFF: Objection.

20 THE WITNESS: The NCAA has set these  
21 standards in place and Lia Thomas followed everything,  
22 she has followed the rules and so it's really  
23 unfortunate to see how much hate and lack of respect and  
24 lack of kindness has been thrown her way. It's just



1 really hard stuff. I understand that athletes --- this  
2 is new and I think each sport will be just looking at  
3 the criteria they use and so, you know, they may tweak  
4 some things along the way. But I don't think we can  
5 take it out on Lia Thomas who has done everything that  
6 has been asked of her.

7 BY ATTORNEY TRYON:

8 Q. Is there anything that you are aware of --- this  
9 swimmer doesn't say I hate Lia Thomas. You just started  
10 out talking about hate. Where do you get that from?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: From everything coming from  
13 social media. And so she fears retribution and wants to  
14 stay anonymous. Lia Thomas I feel has a lot of courage  
15 to put herself out there knowing that there is going to  
16 be a lot of people unhappy and a lot of pushback and,  
17 you know, kind of couple of things that she says is just  
18 referring to be who she is, ready to compete. And so  
19 I'm acknowledging this is a really difficult situation,  
20 right, for swimmers, for her teammates, but I think in  
21 this case we have to wait to see what the NCAA and what  
22 the USA Swim group decides to do and what they decide is  
23 fair. And they have ongoing studies about how to be  
24 inclusive and yet fair, and I'm confident that we can

1 keep pursuing that and there may be a learning curve for  
2 us, right, or it may be that this is determined with  
3 data over time that this is exactly what the criteria  
4 needs to be.

5 BY ATTORNEY TRYON:

6 Q. So let's turn to the third page underneath that  
7 picture, it says --- keep going down. I'm sorry. More  
8 please, below the next picture. There we go. And right  
9 --- so the paragraph, it says they are just proving,  
10 once again, that they don't actually care about women  
11 athletes, the swimmer said of the University of  
12 Pennsylvania. They said they care and that they're here  
13 for our emotions, but why do we have to be gracious  
14 losers? Who are you you to tell me that I shouldn't  
15 want to win because I do want to win. I'm swimming.  
16 I'm dedicating more than 20 hours a week to the sport.  
17 And obviously I want to win. You can't just tell me  
18 that I should be happy with second place. I'm not. And  
19 these people in Penn's administrative department who  
20 just think that women should just roll over, it's  
21 disturbing and it's reminiscent of the 1970s when the  
22 are fighting for Title 9 and stuff like that. They  
23 don't actually care about women at all. What would you  
24 say to this swimmer?

1                    ATTORNEY VEROFF:    Objection.

2                    THE WITNESS:    I'd say I just recognize  
3    that you're really frustrated with this and you don't  
4    agree with it and that we --- well, I think, you know  
5    when stuff is new and we don't have a lot of experience  
6    or exposure to it, you know, that is really hard.    I  
7    just reflect back to my first semester at college and I  
8    was just having lunch at a long table with lots of  
9    women, and my roommate told me afterwards that every  
10   person that we had lunch with, which was a lot, that  
11   they were all gay.    And I had no idea, never --- I grew  
12   up in Texas, never talked to anybody, never knew anybody  
13   that I knew was gay, was probably just naive.

14                    And so down the road now, some people  
15   that I'm closest to and love in the world are gay and it  
16   is not anything that I give any thought to.    It's like,  
17   you know, crazy that is what happens over time.    And I  
18   see the same thing happening with transgender athletes.  
19   We're just going to --- who would want to have the  
20   courage to come out and just put your lives out there  
21   and your family and do everything that they have to do,  
22   too, and so I think we'll all just grow and we'll learn  
23   more about what this experience is and we'll be able to  
24   see, right, that here is just another athlete like me.

1 We have more in common than we don't. And I think over  
2 time a lot of views will change and we'll just keep  
3 working on trying to be as fair as we can on what the  
4 criteria should be. But with this athlete I would say  
5 nothing changes for you. What you are trying to do is  
6 be the absolute very best that you can be, right, and so  
7 let's keep working hard, let's keep seeing what you can  
8 do. In swimming, that's a nice sport to just be able to  
9 stay focused on your time and your performance and  
10 proving your technique.

11 BY ATTORNEY TRYON:

12 Q. And so you are saying that this girl should be a  
13 gracious loser, period, right?

14 ATTORNEY VEROFF: Objection.

15 THE WITNESS: No. I'm saying if that  
16 suggests that every transgender female that ever  
17 competes in sports is going to be every female, right,  
18 and that's just crazy, so --- and you know, I'm not  
19 following it that closely, but Lia Thomas has lost races  
20 as well. So just to say that she is here.

21 BY ATTORNEY TRYON:

22 Q. Right.

23 A. And I'm just a big loser for now because I can  
24 never, you know, beat her, no, you just go out there and

1 compete because that's what sports is about.

2 Q. And that --- sorry, go ahead. I thought you  
3 were finished.

4 A. Sorry. It's just out of, you know, some of  
5 these rules are things that are just out of her control  
6 so she needs to stay focused on what she can focus on.

7 Q. Is it your view that these girls that are  
8 objecting to Lia Thomas being on the team are doing it  
9 because they hate Lia Thomas?

10 ATTORNEY VEROFF: Objection.

11 THE WITNESS: No, no, I don't know any of  
12 these athletes.

13 BY ATTORNEY TRYON:

14 Q. Let me ask you to take a look at Exhibit-11.  
15 Let me know when you have it.

16 A. Okay, I have it.

17 Q. This is the opening paragraph and this says  
18 Virginia Tech, fifth year Reka Gyorgy has released a  
19 letter to NCAA addressing her opinion on the  
20 organization's controversial transgender policy which  
21 allowed Penn fifth year Lia Thomas to compete at the  
22 NCAA championships last week. And if we can turn to the  
23 page we can see the actual letter written by this  
24 swimmer. It is in italics. And let me start with the

1 second paragraph. My name is Reka Gyorgy of Hungary. I  
2 am a 2016 Rio Olympian, represented Virginia Tech for  
3 the past five years, a two-time ACC champion, two time  
4 all-American and three-time honorable mention  
5 all-American. And then skipping down one paragraph she  
6 says, Micka, if I'm saying her name right, says I'm  
7 writing this letter right now in hopes that the NCAA  
8 will open their eyes and change these rules in the  
9 future. It doesn't promote our sport in a good way and  
10 I think it's disrespectful against the biologically  
11 female swimmers who are competing in the NCAA.

12 And then I want to skip down --- well, let's  
13 just continue on the next paragraph. I don't want to  
14 skip too much. I swam the 500 free at NCAA on  
15 March 17th, 2022, where I got 17th which means I didn't  
16 make it back to the finals and first alternate. I am a  
17 fifth-year senior. I have been top 16 and top 8 and I  
18 know how much a privilege it is to make finals at a big  
19 --- at a meet this big. This is my last college meet  
20 ever and I feel frustrated. It feels like that final  
21 spot was taken away from me because of the NCAA's  
22 decision to let someone who is not a biological female  
23 compete. I know you can say I had the opportunity to  
24 swim faster, make the top 16, but this situation makes

1 it a bit different and I can't help but be angry or sad.  
2 It hurts me, my team and other women in the pool. One  
3 spot was taken away from a girl that got 9th in the 500  
4 free and didn't make it back to the A final, preventing  
5 her from being an all-American. Every event that  
6 transgender athletes competed in was one spot taken away  
7 from biological females throughout the meet. Do you  
8 disagree with Reka Gyorgy?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: I recognize that she is  
11 very frustrated and feels that this decision wasn't  
12 fair. You know, if we're looking at a bigger picture I  
13 think sport organizations at the Olympic level,  
14 international level, national level, are all invested in  
15 keeping this value of inclusion, right, and trying to  
16 balance that with fairness, and so I think it's  
17 something these organizations are really going to keep  
18 working on and that ---.

19 BY ATTORNEY TRYON:

20 Q. Sorry. Go ahead.

21 A. And that they are going to be able to find a  
22 good spot that is somewhere --- somewhere in a place  
23 that can be respectful, be it transfemale athletes and  
24 also the female athletes on these teams.

1 Q. So you talk about a good spot. You don't know  
2 what that good spot is.

3 Is that right?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: No, I don't --- sorry,  
6 Julie, but I'm confident that there are many people  
7 looking --- spending a lot of time and trying to figure  
8 out how to answer some of these questions. In response  
9 to this athlete, she's probably knocked out a lot of  
10 other female athletes because maybe she had more  
11 advantages along the way, right. Maybe her parents were  
12 able to put her in good programs or good coaching and  
13 things like that. So you know, it's just never like a  
14 --- we like to just think what a sweet, perfect world it  
15 is where everyone has the same opportunities and, you  
16 know, there's just a lot that's not fair out there,  
17 right, across for athletes, but I think we do the best  
18 we can, which is what the NCAA has tried to do at this  
19 point. And like I said, things may be changing, yeah,  
20 but then --- but just to go back to the other side, for  
21 the answer to be a blanket exclusion of all transgender  
22 athletes at every level is not helping us move forward.

23 BY ATTORNEY TRYON:

24 Q. But you think even Lia Thomas should have been



1 allowed to participate in this swim meet, right?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Yeah, I don't think it  
4 matters what I think because I'm just not that emersed  
5 in the sport to know everything. So whether it's ten  
6 whatever it is nanomols per liter or whether, you know,  
7 that's going to change, I don't know, but I think she  
8 --- I respect her, she did everything the sport has  
9 asked her to do. And she says she gets in the pool  
10 every day and gives it her best effort. And those are  
11 the kind of teammates I like to have, right, that are  
12 that way. So I think everybody can --- her teammates  
13 can look at this as maybe they can make each other  
14 better and grow as human beings and make the world  
15 better.

16 BY ATTORNEY TRYON:

17 Q. So again you think Lia Thomas's teammates should  
18 just knuckle under and be happy about it and be  
19 complete, is that right?

20 ATTORNEY VEROFF: Objection.

21 THE WITNESS: I feel sympathy and empathy  
22 for so many athletes that are dealing with difficult  
23 challenges, right, including these athletes, right, and  
24 I just acknowledge, yeah, it must be tough, right,

1 you've just been doing your thing in your sport for a  
2 long time and then you happen to be at the center stage  
3 of some of this taking place, but, you know, it's just a  
4 lot of challenges that athletes are dealing with on many  
5 levels and so I don't think they are unique in, you  
6 know, it's not like they are the only athletes that have  
7 challenges to deal with.

8 BY ATTORNEY TRYON:

9 Q. Do you think that --- are you equating the fact  
10 that this swimmer might have had some advantages in her  
11 life to the fact that Lia Thomas had been --- had gone  
12 through puberty and was maybe as much as a foot taller  
13 than the other swimmers, those are just the same thing?

14 A. No.

15 ATTORNEY VEROFF: Objection.

16 THE WITNESS: I'm sorry. I'm not  
17 equating those. I'm just simply saying what I feel as  
18 the truth, that not everybody out there has all the same  
19 opportunities, right, and access and great coaching and  
20 facilities and everything else. So I think the NCAA is  
21 trying to do the best that they can and everybody is  
22 learning, right, so ---.

23 BY ATTORNEY TRYON:

24 Q. One of the things that we are learning that

1 these other girls, biological girls, are feeling very  
2 marginalized. Does that count for anything?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: I think there is a lot that  
5 our field of sports psychology can offer here in terms  
6 of helping people work through these things. But I  
7 would just go back to if we think the answer is to  
8 exclude all transgender female athletes from competing,  
9 then that's not right, and so we're going to have to  
10 maneuver this, we are all going to have to be involved  
11 in helping figure out how to move forward.

12 BY ATTORNEY TRYON:

13 Q. Let me just be clear, HB-3293 does not exclude  
14 any athletes from competing in sports, does it?

15 ATTORNEY VEROFF: Objection.

16 THE WITNESS: Okay.

17 From my perception it does because BPJ is  
18 a female and wants to compete with her female peers.

19 BY ATTORNEY TRYON:

20 Q. Okay.

21 A. So I don't see that as a good option for her to  
22 compete with the males.

23 Q. What about Lia Thomas? I mean, Lia Thomas looks  
24 like a male?

1                    ATTORNEY VEROFF: Objection.

2            BY ATTORNEY TRYON:

3            Q.        And couldn't he compete on the male team as he  
4            had been for years and then the coach on that team  
5            simply say, yeah, Lia Thomas now goes by she, but Lia  
6            Thomas is going to compete on the boys teams and you  
7            guys just need to respect that?

8                    ATTORNEY VEROFF: Objection.

9                    THE WITNESS: As a cisgender female it's  
10            hard to fathom that you wake up and you just feel like  
11            you are in the wrong body, right. And the more I've  
12            read over the years and the more I've heard people share  
13            their stories, it must just be excruciatingly painful to  
14            go through life and feel like that's your situation, and  
15            so ---.

16           BY ATTORNEY TRYON:

17           Q.        Right. And nobody is disagreeing with that,  
18           nobody is contesting that, just the question --- the  
19           right question is what's fair to everyone, not just to  
20           the transgender person, but also to the biological  
21           girls.

22                    Isn't that the question?

23                    ATTORNEY VEROFF: Objection.

24                    THE WITNESS: Right. I think the

1 question is how do we balance that inclusion and  
2 fairness.

3 BY ATTORNEY TRYON:

4 Q. I'm almost finished. I'm going to read you a  
5 series of statements and please tell me if you agree or  
6 disagree. Either one is fine. I just want to  
7 understand your position. Or you may say I don't know.  
8 That's fine too. The first statement, there are  
9 physiological differences between natal males and natal  
10 females.

11 ATTORNEY VEROFF: Objection. Apologies,  
12 objection.

13 THE WITNESS: True.

14 ATTORNEY VEROFF: Sorry to --- Mr. Tryon,  
15 are these your documents or are these statements coming  
16 from a document somewhere.

17 ATTORNEY TRYON: No, these are my  
18 statements.

19 ATTORNEY VEROFF: Thank you for the  
20 clarification.

21 BY ATTORNEY TRYON:

22 Q. Second, there are physiological difference in  
23 natal males and natal females that result in males  
24 having a significant performance advantage over

1 similarly gifted age and trained females in nearly all  
2 athletic events after puberty?

3 ATTORNEY VEROFF: Objection.

4 BY ATTORNEY TRYON:

5 Q. Agree or disagree?

6 ATTORNEY VEROFF: Objection.

7 THE WITNESS: I think there is exceptions  
8 to this, but as a general rule that is true.

9 BY ATTORNEY TRYON:

10 Q. Number three, there are physiological  
11 differences between males and females that result in  
12 males having a significant performance advantage over  
13 similarly gifted aged and trained females in nearly all  
14 athletic events during puberty as opposed to after  
15 puberty. Do you agree or disagree?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: Yeah, I think it --- I  
18 think that statement somewhat depends on what we define  
19 as significant.

20 BY ATTORNEY TRYON:

21 Q. Fair enough. Four, there are physiological  
22 differences between males and females that result in  
23 males having a significant performance advantage over  
24 similarly gifted aged and trained females in all

1 athletic events before puberty?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: Disagree.

4 BY ATTORNEY TRYON:

5 Q. Okay.

6 Number five, there is not scientific evidence  
7 that any amount or duration of cross sex hormone  
8 therapy, puberty blockers, androgen inhibitors or cross  
9 sex hormones, eliminates all physiological advantages  
10 that result in males performing better than females in  
11 nearly all athletic events?

12 ATTORNEY VEROFF: Objection.

13 THE WITNESS: Okay.

14 And I'm just going to say that is beyond  
15 my expertise and knowledge of that literature.

16 BY ATTORNEY TRYON:

17 Q. Males who have recently --- excuse me, males who  
18 have received such therapy retain sufficient male  
19 physiological traits that enhance athletic performance  
20 vis-à-vis similarly aged females from a physiological  
21 perspective more accurately characterized as male ---  
22 agree or disagree?

23 COURT REPORTER: I'm sorry, Counsel. Can  
24 you restate that question? I missed it.

1 ATTORNEY TRYON: Sure.

2 BY ATTORNEY TRYON:

3 Q. Males who have received such therapy that I  
4 mentioned in question number five retain sufficient male  
5 physiological traits that enhance athletic performance  
6 vis-a-vis similarly aged females and are thus from a  
7 physiological perspective more accurately characterized  
8 as male and not female?

9 | ATTORNEY VEROFF: Objection.

10                   THE WITNESS: Again, I would say that  
11 exceeds my expertise.

12                                    ATTORNEY TRYON:    Fair enough.    Let me go  
13 off the record for just a few minutes.    I think I've  
14 covered everything, but I just want to make sure, and  
15 then I will turn the time over to my co-Defendants if  
16 they have any questions.    So just give me five minutes  
17 to go off the record.    Is that all right with everyone?

18 ATTORNEY VEROFF: Thank you.

19 THE WITNESS: Yes.

20                                VIDEOGRAPHER:    Going off the record.    The  
21    time reads 4:45 p.m. Eastern Standard Time.

22 | OFF VIDEOTAPE

23 | ---

24 (WHEREUPON, A SHORT BREAK WAS TAKEN.)



1

---

2

ON VIDEOTAPE

3

VIDEOGRAPHER: We are back on the record.

4

The current time is 4:53 p.m. Eastern Standard Time.

5

ATTORNEY VEROFF: Excellent. Thank you.

6

Mr. Tryon, in our last exchange with Professor Fry you

7

read a series of statements and I asked you if these

8

statements were coming from any documents. You said,

9

no, these are my statements. And I just want to put on

10

the record that it appears that in some of those

11

statements you were reading from portions of the report

12

of Doctor Brown, one of Defendant's expert witnesses.

13

ATTORNEY TRYON: Well, in response, they

14

were generated from that, but they are not his

15

statements precisely, so --- and I think that I

16

represented that correctly if you are suggesting that I

17

misrepresented it.

18

ATTORNEY VEROFF: Thank you.

19

ATTORNEY TRYON: More over I don't think

20

I need to reference the source of my questions, but I

21

appreciate your statement.

22

ATTORNEY VEROFF: Thank you. I was just

23

clarifying, I thought that the answer that you gave

24

earlier was your statements and was inaccurate, and so I

1 just wanted to clarify that for the record.

2 ATTORNEY TRYON: Well, I believe it to be  
3 accurate, but we'll agree to disagree perhaps.

4 BY ATTORNEY TRYON:

5 Q. So back to my questions, Professor Fry, it seems  
6 that you have a specific view about transgender girls or  
7 women participating on girls or women's teams.

8 Is that a fair statement?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Can you be more specific?

11 BY ATTORNEY TRYON:

12 Q. So you indicated numerous times of your belief,  
13 generally, that trans --- that males who identify as  
14 females should be allowed to participate on girls teams.

15 Right?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: Again, I've stated that I'm  
18 opposed to having a blanket exclusion policy for all  
19 transfemale athletes.

20 BY ATTORNEY TRYON:

21 Q. When did you arrive at that position?

22 A. I'm not sure.

23 Q. Was it sometime in the past two years or  
24 somewhere before then?

1 A. I'd say before then, but I'm not sure.

2 Q. Okay.

3 Do you have any idea at all what timeframe?

4 ATTORNEY VEROFF: Objection. Asked and  
5 answered.

6 THE WITNESS: I'm really not sure. You  
7 know, things just kind of blur over time.

8 BY ATTORNEY TRYON:

9 Q. Sure.

10 A. But I'm a fan of trying to let athletes  
11 participate. So I'm not sure. I definitely learned  
12 more over the last few years and may come from a more  
13 knowledgeable position but I think it's one I felt for  
14 sometime.

15 Q. For more than ten years?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: You know, it's just hard to  
18 say. I don't remember this being part of the  
19 conversation so much ten years ago, so if someone had  
20 asked, yeah, I'm really not sure how to put a timeframe  
21 on it.

22 BY ATTORNEY TRYON:

23 Q. Do you know when the first time is you heard of  
24 the idea of transgender women participating or

1 transgender females participating on girls sports?

2 A. Again, I don't know. You know, I've been  
3 attending sports psychology conferences for the last  
4 30 years, and I don't remember the first time I sat in  
5 on a session, or you know, began to learn more.

6 Q. Okay.

7 A. I really don't.

8 Q. Very good. What's the total compensation that  
9 you received or that you've charged for in this case so  
10 far?

11 A. In this case?

12 Q. Yes, in this case.

13 A. Yeah, I haven't turned in a bill, so I haven't  
14 received anything.

15 Q. So how much have you incurred so far as fees in  
16 this case?

17 A. Yeah, I've --- I think it's in the ballpark of  
18 eight to ten hours probably prior to today.

19 Q. And what is your hourly rate?

20 A. \$250.

21 Q. And how about in the other three cases combined,  
22 how much have you --- how many hours have you expended?

23 A. Probably eight to ten hours for the Connecticut  
24 and Idaho cases together.

1 Q. And Florida?

2 A. In Florida, four.

3 Q. So when you first ---?

4 A. Sorry.

5 Q. Sorry, go ahead.

6 A. Four to six, and I billed for four, though, so I  
7 received a thousand for Florida --- in the Florida case.

8 Q. Do I understand correctly then that the first  
9 report that you did was for Connecticut?

10 A. We started that one and then there was ---  
11 that's when COVID hit and the season was on hold. I  
12 would have to go back and look. But I think the first  
13 one that was filed ended up being Idaho even though we  
14 started on Connecticut --- or I was part of the  
15 Connecticut one.

16 Q. And you believe you are able to put this whole  
17 report together in eight to ten hours for Connecticut?

18 ATTORNEY VEROFF: Objection.

19 THE WITNESS: Yes.

20 BY ATTORNEY TRYON:

21 Q. And your billing rate is the same for all of  
22 them?

23 A. That's correct.

24 ATTORNEY TRYON: I don't have any further

1 questions. And so thank you for your time. It is  
2 always stressful and so I appreciate it. I recognize  
3 that it was stressful and that I do appreciate your  
4 patience and your time. Thanks?

5 THE WITNESS: Thank you. Thanks very  
6 much.

7 ATTORNEY SCRUGGS: I guess I will jump in  
8 since none of the other Defendants want to.

9 ATTORNEY TRYON: Go ahead.

10 ATTORNEY SCRUGGS: Okay.

11 ---

12 EXAMINATION

13 ---

14 BY ATTORNEY SCRUGGS:

15 Q. Hello, Doctor Fry. How are you doing? Can you  
16 hear me okay?

17 A. I can. Doing well. Thank you.

18 Q. So my name is Johnathan Scruggs. I'm an  
19 attorney for the intervening Defendant, Lainey  
20 Armistead, in this case. So I'm just going to ask you a  
21 few questions. The good news is I won't ask many  
22 questions as the prior testimony, and I can't since we  
23 are limited in time. So I will try to go quick. But  
24 the most important question actually I have for you is

1     what is your favorite barbecue place in Memphis? That's  
2     the real question.

3           A.     I guess I'd have to go with the Rendezvous. My  
4     husband and I had our first date there. That was kind  
5     of special.

6           Q.     Well, I'm from there originally, so that's why I  
7     asked.

8           A.     Where are you from?

9           Q.     I'm from Memphis, the Memphis area originally.

10          A.     Okay.

11          Q.     I'm more partial to central barbecue places, but  
12     they're all good. So anyway, I want to turn a little  
13     bit to paragraph 38 of your expert report. It is  
14     Exhibit 2 there. And I want to turn you more toward the  
15     end of that paragraph where it says when athletes are  
16     excluded from participating in the sport or in a climate  
17     where they do not feel accepted or respected, they do  
18     not have the opportunity to reap these benefits. Now,  
19     what benefits are you talking about there?

20          A.     The benefits of participating in sport and to  
21     --- yeah, sorry, let me read this one more time, this  
22     paragraph, please.

23          Q.     Absolutely.

24          A.     Yeah, so I was referring to the benefits

1 highlighted throughout this statement that come from  
2 having a chance to participate in a really positive  
3 climate. But in this particular paragraph saying that  
4 there's some advantages to females who are able to  
5 participate, right, and might be more likely to go on to  
6 college and those things.

7 Q. Let's just talk generally real quick. Can you  
8 outline, kind of, just as general benefit beyond that  
9 one specific one you mentioned?

10 ATTORNEY VEROFF: Objection. Asked and  
11 answered.

12 BY ATTORNEY SCRUGGS:

13 Q. You can answer the question.

14 A. Okay. Well, throughout the statement these  
15 benefits of being able to participate in sport, you  
16 know, in a caring climate that, you know, people can  
17 have fun, can have good experiences and good  
18 relationships with coaches and athletes. They can have  
19 --- just reap the physical benefits of being in better  
20 health and --- both psychologically and physically.  
21 They can express greater empathy for others, and you  
22 know, better sportspersonship, right, really evaluate  
23 being a respectful competitor and things like that.

24 Q. Now, in your last sentence in paragraph 38, you



1 don't have a timeframe mentioned in terms of when  
2 athletes are excluded from participating in sports they  
3 don't have the opportunity to reap these benefits. Do  
4 you mean when they don't have an opportunity for a  
5 substantial period of time or any type of loss of  
6 participation for any period of time?

7 A. So when athletes are excluded from sport --- I'm  
8 not sure I'm following you, but if they were excluded  
9 for a day or two, are you saying would that be a big  
10 deal or are they excluded for a whole season or  
11 they ---?

12 Q. Sure. Sure. I'm just wondering if you can put  
13 that in a timeframe?

14 A. No, but I would grant that if they're excluded  
15 for a day or something like that, we wouldn't be here  
16 talking about it probably, but yeah, on a bigger scale.

17 Q. But you would agree that if students were  
18 excluded from participating in high school sports for  
19 four years, they would miss out on the opportunities for  
20 participating in youth sports?

21 A. Yes.

22 Q. And I assume the same is for a year.

23 Correct?

24 A. Yes.

1 Q. Let's say there's a policy as far as males with  
2 female gender identities to undergo testosterone  
3 suppression for a year before they can participate on  
4 the girl's team, would that policy force at least some  
5 athletes to miss out on some opportunities associated  
6 with youth sports?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: It could.

9 BY ATTORNEY SCRUGGS:

10 Q. Well, could you envision where it wouldn't?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: I'm just thinking they  
13 might have other options or could play on a co-gender  
14 team that's maybe not part of their school, what they  
15 really wanted to do was on their school, but there could  
16 be another possibility.

17 BY ATTORNEY SCRUGGS:

18 Q. Yeah, so being a situation where they only  
19 wanted to be on their school and had to undergo  
20 testosterone suppression for a year to do so, they would  
21 lose out on those benefits for that year.

22 Correct?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Uh-huh (yes).

1 BY ATTORNEY SCRUGGS:

2 Q. Now, earlier we discussed HB-3293 the law that  
3 is at issue in the case. Now, I don't want to retread a  
4 lot of old ground, but I just want to put it in your  
5 words. So what is the problem, in your opinion, with  
6 this law?

7 ATTORNEY VEROFF: Objection as to scope.

8 THE WITNESS: I think it's --- you know,  
9 provides a blanket of exclusion of transgender female  
10 athletes from participating in the secondary and college  
11 level, and that is unfortunate and harmful.

12 BY ATTORNEY SCRUGGS:

13 Q. Ma'am, I'm sorry your answer broke up there. I  
14 think my internet connection was a bit faulty. Can I  
15 ask the court reporter to read back that answer?

16 ---

17 (WHEREUPON, COURT REPORTER READS BACK PREVIOUS ANSWER)

18 ---

19 BY ATTORNEY SCRUGGS:

20 Q. And how harmful exactly?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: It is harmful, because I  
23 think what school districts are trying to do is help  
24 every child reach their own potential and bring out

1 their best and but we have these activities available  
2 but we are telling a particular group of kids that you  
3 can't participate in these activities and these maybe  
4 very important to them and be extremely valuable part of  
5 their educational experience through the secondary  
6 schools.

7 BY ATTORNEY SCRUGGS:

8 Q. Got it. Got it. And now earlier in your  
9 testimony you mentioned you didn't think it's a problem  
10 if a male --- that would be a male that was excluded  
11 from, for example, the women's girl track team.

12 Do you remember that?

13 ATTORNEY VEROFF: Objection.

14 THE WITNESS: I'm sorry, did you say a  
15 male who identifies as a male?

16 BY ATTORNEY SCRUGGS:

17 Q. Yes, yes. From the women's sports team?

18 A. Right. The team for the females is for the  
19 females, right, so I would agree.

20 Q. So you don't think HB-3293 is not problematic in  
21 that situation?

22 ATTORNEY VEROFF: Objection.

23 THE WITNESS: Right.

24 BY ATTORNEY SCRUGGS:

1 Q. And that's true even if that male loses out on  
2 an opportunity from participating on the girl's track  
3 team?

4 ATTORNEY VEROFF: Objection.

5 THE WITNESS: Right. Right. But they're  
6 identifying as a male and can perform on a --- can  
7 participate on the male's team.

8 BY ATTORNEY SCRUGGS:

9 Q. So they can participate on the male's team and  
10 that is why they talk about it?

11 ATTORNEY VEROFF: Objection.

12 THE WITNESS: Right.

13 BY ATTORNEY SCRUGGS:

14 Q. What if that male athlete is not fast enough to  
15 run on the male team?

16 ATTORNEY VEROFF: Objection.

17 THE WITNESS: In say cross-country  
18 or ---?

19 BY ATTORNEY SCRUGGS:

20 Q. Yes. On cross country is not fast enough for  
21 the male team, cannot run on the male team, should that  
22 male at least be able to participate on the female track  
23 team?

24 ATTORNEY VEROFF: Objection.

1                   THE WITNESS: Right, no, no. No people  
2 at tryouts do not make teams. But he is a male,  
3 identifying as a male then he should stick with that  
4 team.

5 BY ATTORNEY SCRUGGS:

6       Q. So in that situation, it doesn't matter, that  
7 male athlete doesn't have another option?

8                   ATTORNEY VEROFF: Objection.

9                   THE WITNESS: Right.

10 BY ATTORNEY SCRUGGS:

11       Q. Okay.

12                   Wouldn't it be more inclusive to allow the man  
13 to participate on the female track team?

14                   ATTORNEY VEROFF: Objection.

15                   THE WITNESS: I don't see it like that,  
16 right. There's a male track team and a male can try out  
17 for the that. And the good news is with cross-country  
18 they can handle a lot of athletes so often there is not  
19 a cut policy in cross-country.

20 BY ATTORNEY SCRUGGS:

21       Q. Well, I think I can easily give a scenario where  
22 the male can't make the male track team, but there is an  
23 open slot on the female track team, so that males who  
24 identify as males, should that person be able to

1 participate on the female track team?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: No. Sorry. No. No, I  
4 don't think so.

5 BY ATTORNEY SCRUGGS:

6 Q. Well, why doesn't --- why shouldn't we value  
7 their participation on an athletic team?

8 ATTORNEY VEROFF: Objection.

9 THE WITNESS: I don't think we're saying  
10 we wouldn't value that, right. That happens all the  
11 time.

12 BY ATTORNEY SCRUGGS:

13 Q. Yeah. I'm saying why don't we value --- why  
14 don't we promote their participation in athletics and  
15 allow them to participate on the female track team?

16 ATTORNEY VEROFF: Objection. And please  
17 let the witness finish her answer.

18 THE WITNESS: I think there's a team for  
19 this male athlete to at least try out for and go for and  
20 so I don't see the issue that we're not being inclusive  
21 and giving this athlete an opportunity to try out for  
22 that team. Across teams and across schools, many  
23 athletes try out for sports and don't make the team.

24 BY ATTORNEY SCRUGGS:

1 Q. Well, BPJ can try out for the male track team.

2 Correct?

3 ATTORNEY VEROFF: Objection.

4 THE WITNESS: That doesn't seem to be a  
5 viable option since BPJ is a female.

6 BY ATTORNEY SCRUGGS:

7 Q. Gotcha. Okay. Let me turn you toward  
8 paragraph 37 in your expert report, again I'm going to  
9 ask you about the second question --- the second -- or  
10 the last sentence, excuse me, there, where it says if  
11 transgender students are arbitrarily excluded from these  
12 sports they are in turn deprived of this positive  
13 experience as an outcome and their teammates are  
14 deprived of a generally optimal sport experience. Did I  
15 read that correctly?

16 A. Yes, I think so.

17 Q. Now, would you agree that if we just said any  
18 student is excluded from youth sports, they are deprived  
19 of those positive experiences and outcomes and their  
20 teammates are deprived of a generally optimal sports  
21 experience?

22 A. Yeah, I'm not thinking of a situation where that  
23 is not the case right now.

24 Q. So would you agree that if it said if any



1 student, no matter their gender identity, were  
2 arbitrarily excluded from youth sports, they are  
3 deprived of those positive experiences and outcomes?

4 A. I would just add that based on their gender  
5 identity, right. So you could have a trans female  
6 athlete who tries out for a team and doesn't make it,  
7 right, we're not including that in the same ballpark  
8 here with just having a blanket statement that  
9 transfemale athletes may not participate.

10 Q. I guess I'm not really following you. But  
11 again, you would agree that if any students are  
12 arbitrarily excluded, they reap the benefits from youth  
13 sports?

14 ATTORNEY VEROFF: Objection. Asked and  
15 answered.

16 THE WITNESS: No, I wouldn't agree with  
17 that. I would need the context of that because the  
18 example I'm giving is transgender female athlete tries  
19 out for a female team and doesn't make it, right, and so  
20 would be excluded for that reason, that they're --- this  
21 team is limited in how many positions they have and they  
22 --- particular, you know, some kids try and don't make  
23 the team.

24 BY ATTORNEY SCRUGGS:

1 Q. Let me turn you to your Declaration, your  
2 initial expert Declaration, I think it's Exhibit 1, and  
3 then let me turn you to paragraph 44 and just read the  
4 second sentence, which says, if athletes are arbitrarily  
5 excluded from youth sports, they are, in turn, deprived  
6 of those positive experiences and outcomes and their  
7 teammates are deprived of a generally task involving and  
8 caring sports climate. Do you see that?

9 A. I do.

10 Q. And are you referring to all athletes there?

11 A. I think the point is arbitrarily there.

12 Q. Uh-huh (yes).

13 A. Right, then --- so if we're just saying we  
14 should have a cut policy because that's not fair, right,  
15 that's not what I'm insinuating here, right, just saying  
16 but to have this --- make this decision that as a  
17 blanket statement that certain group of athletes can't  
18 participate, can't try out, can't participate, then,  
19 yes, I think the statement is true.

20 Q. Yes, I think we are saying the same thing. Let  
21 me ask it another way. Again, focusing on the  
22 arbitrarily, if all athletes --- if any athlete is  
23 arbitrarily excluded, that creates a problem in your  
24 mind?

1                    ATTORNEY VEROFF: Objection. Asked and  
2 answered.

3                    THE WITNESS: Yes, I think it changes the  
4 meaning to say if any athletes, any athlete under any  
5 circumstances, but I just mean --- athletes here.

6 BY ATTORNEY SCRUGGS:

7            Q.        Yeah, I'm not saying under any circumstances. I  
8 guess what I'm trying to figure out is what role does an  
9 athlete's gender identity play in that sentence. It  
10 says if athletes were arbitrarily excluded, so I assume  
11 there could be a male athlete who identifies as male.  
12 If that athlete is arbitrarily excluded, that creates a  
13 problem that you identify in that paragraph?

14            A.        I'm not familiar with --- sorry, Julie.

15                    ATTORNEY VEROFF: Objection.

16                    THE WITNESS: I'm not familiar with that  
17 case where the male athlete is arbitrarily prevented  
18 from participating. I'm not sure what you're referring  
19 to there.

20 BY ATTORNEY SCRUGGS:

21            Q.        Well, let's think about a situation on the  
22 sports team where a coach cuts an athlete, a female  
23 athlete who identifies as female and instead it favors  
24 the coach's own daughter, for example. You would

1 consider that an arbitrary exclusion, right?

2 ATTORNEY VEROFF: Objection.

3 THE WITNESS: No. We'd have to know a  
4 whole lot more about that situation.

5 BY ATTORNEY SCRUGGS:

6 Q. Okay.

7 A. Maybe the coach's daughter deserves to be on  
8 the team and if the team can only handle so many maybe  
9 that's how it had to be. But to make the assumption  
10 that because it was the coach's daughter that it wasn't  
11 a fair process ---.

12 Q. I'm assuming that was the only reason that the  
13 athletes have been chosen and someone else is excluded?

14 A. In other words, if a coach just says I don't  
15 like you, I don't want you on my team.

16 Q. Exactly.

17 A. It seems like there would be guidelines in place  
18 for someone to appeal that to the Athletic Director and  
19 so on, and yeah, that doesn't sound like it'd be very  
20 fair to not give someone a chance.

21 Q. Exactly. And that kind of principle applies  
22 regardless of someone's gender identity?

23 ATTORNEY VEROFF: Objection.

24 THE WITNESS: Okay. Yeah. If I'm

1 following you, yes, I think.

2 BY ATTORNEY SCRUGGS:

3 Q. Yeah. Now, switching gears slightly, you  
4 mentioned --- to go back --- let's go back actually to  
5 your expert report, paragraph 37. And again, that last  
6 sentence that transgender students are arbitrarily  
7 excluded, what is the situation when a transgender  
8 student is not arbitrarily excluded from youth sports  
9 --- or let me strike that. Let me rephrase.

10 What is a situation, to use your term,  
11 transgender student doesn't make the sports team and  
12 that's not arbitrary? Did you hear that question?

13 A. Sorry, I thought the court reporter was asking  
14 for it to be repeated or something.

15 Q. No. I'm sorry.

16 A. No, that's okay. I lost something, okay. So  
17 you're saying, for example, a transfemale athlete tries  
18 out for a female athletic team and doesn't make it?.

19 Q. I'm asking is that an example of a non-arbitrary  
20 exclusion?

21 A. Yes. In general, I would say, yes, without  
22 having more details, all right, but it doesn't ---  
23 transathletes, right, would just have the right to try  
24 out, the right to, you know, potentially participate,

1 but it doesn't mean that everyone would make the team.

2 Q. Got it. So that situation where you have the  
3 male athlete who identifies as female, right, and just  
4 doesn't make the team, do they lose out on the  
5 experiences and opportunities associated with  
6 participating in sports?

7 ATTORNEY VEROFF: Objection.

8 THE WITNESS: Yeah, it depends. You  
9 know, some might participate in another sport, right, or  
10 find another avenue, but the potential is there for  
11 that, yeah.

12 BY ATTORNEY SCRUGGS:

13 Q. So in a situation where there is no other  
14 opportunity or avenue, but we are saying that athlete  
15 just can't make that team because they just don't have  
16 that athletic skill, in that situation they would lose  
17 out on the opportunity outcomes associated with  
18 participating on that team?

19 ATTORNEY VEROFF: Objection.

20 BY ATTORNEY SCRUGGS

21 Q. So the word arbitrary doesn't really determine  
22 whether someone benefits from the experience and  
23 outcomes of participating in youth sports?

24 ATTORNEY VEROFF: Objection.

1                   THE WITNESS: Right. Inherent within  
2 sports, unfortunately, particularly at the secondary  
3 level, is that not all schools are in a position to let  
4 every child participant who wants to, right, and so  
5 there is a cut policy. Personally, because of  
6 everything I've outlined today, I wish every school  
7 district was doing everything possible to include as  
8 many kids, as many athletes as they could, right, but  
9 that's not the reality. Boys and girls try out for  
10 teams and they get --- you know, they don't make it. I  
11 just saw this clip this weekend, Billy Mills, Olympic  
12 gold medalist, right, he was cut from his track team as  
13 a freshman, right. So that happens. And I'm  
14 distinguishing that from just arbitrarily saying this  
15 whole group of athletes, you don't have the right to  
16 even try out for the team.

17 BY ATTORNEY SCRUGGS:

18       Q. But in terms of taking advantage of the benefits  
19 associated with sports, it's not so much why someone is  
20 excluded but just the fact that they are excluded?

21                   ATTORNEY VEROFF: Objection, asked and  
22 answered.

23                   THE WITNESS: I would say it's important  
24 to consider why they are excluded.

1 BY ATTORNEY SCRUGGS:

2 Q. Okay.

3 And why is that important?

4 A. Because I believe it's harmful to just have a  
5 blanket exclusion of a group of athletes like  
6 transathletes to say you don't have the right to  
7 participate in your school activities, to try out,  
8 right, and to be part of these teams and activities.

9 Q. Well, I'm asking with respect to your expertise  
10 about benefiting from the outcome and advantages of  
11 participating in sports. It seems to me that any type  
12 of exclusion from sports was by definition maybe cannot  
13 take advantage of this opportunity to benefit. Isn't  
14 that correct?

15 ATTORNEY VEROFF: Objection. Asked and  
16 answered.

17 THE WITNESS: No. I'm speaking  
18 specifically about sport because that's what's on the  
19 table in this case, but you know, somebody else might  
20 really experience a caring task involving climate and  
21 have great opportunities in other activities of school  
22 that they're passionate about, like school or music,  
23 right. But if like BPJ, if her passion is sport,  
24 wanting to run track, right, then --- and there's just a



1 blanket statement saying you're not --- you can't, you  
2 can't try out for the women's track team, right, then  
3 that would prevent her from the potential benefits that  
4 she could be reaping, right, and just enhancing her  
5 school experience.

6 Q. Got it. Like the male that identifies as male  
7 and can't participate on either the males sports team or  
8 the female sports team?

9 ATTORNEY VEROFF: Objection.

10 THE WITNESS: Right. The distinction is  
11 that he can participate on the male team. He can try  
12 out, right, just like the transgender female can try out  
13 for the women's team, but there's no guarantee that the  
14 athletes make the team.

15 BY ATTORNEY SCRUGGS:

16 Q. Exactly. So I mentioned to you that I represent  
17 Lainey Armistead. And I will represent to you that she  
18 is a female soccer player on the West Virginia State  
19 University soccer team. Now, I think earlier you  
20 mentioned that you reviewed some documents in the case.  
21 Did you happen to run across any documents mentioning  
22 Ms. Armistead?

23 A. Yes, I read her statement. It's been a little  
24 bit of time, so I might need to be refreshed on it, but

1 I did take a look at that.

2 Q. Okay.

3 Well, let me go to Exhibit --- paragraph 41 of  
4 your expert report.

5 VIDEOGRAPHER: What number did you say,  
6 Counsel?

7 ATTORNEY SCRUGGS: Paragraph 41.

8 VIDEOGRAPHER: Thank you.

9 BY ATTORNEY SCRUGGS:

10 Q. And it says the climate of youth sport must be  
11 geared to include all participants so the teams are more  
12 likely to help every athlete maximize their potential.  
13 From an educational perspective it is optimal to  
14 encourage all athletes to do the best they can and to  
15 help all athletes enjoy the sport that they love.

16 Did I read that correctly?

17 A. Yes.

18 Q. So I assume that would include Ms. Armistead in  
19 your opinion.

20 Correct?

21 ATTORNEY VEROFF: Objection.

22 THE WITNESS: I think some of the ideas  
23 hold, but you know, we were referring here to the  
24 climate of youth sport. Typically in our field we

1 consider youth sport through high school and we would  
2 separate that from collegiate sport.

3 BY ATTORNEY SCRUGGS:

4 Q. Do you think it would be wrong to say that we  
5 should not --- you know, strike that.

6 Do you think that we shouldn't gear athletic or  
7 college sports to include all participants?

8 ATTORNEY VEROFF: Objection.

9 THE WITNESS: You know, at a place like  
10 the University of Kansas where I am, we have different  
11 levels and so you have the D-1 sport, right, and then  
12 you have club sport where people who don't have the  
13 skill level or the experience to play a D-1 sport can  
14 try out for the club sport those --- I think there's  
15 like 40 teams or maybe more we have, and the skill level  
16 among those sport club teams really varies, right. You  
17 got some, that are not hit and giggle, you know, just  
18 everyone's welcome and they don't have --- you know, a  
19 cut policy. Others are pretty competitive and maybe  
20 competing at national levels.

21 But you have another level of intermurals  
22 that is open to every student on campus can sign up,  
23 because they want to play whatever it is basketball or  
24 indoor soccer or something. So I think ideally, you

1 know, universities should offer lots of opportunities  
2 for people to participate in sport.

3 It is not realistic that every student on  
4 campus could participate in you know D-1 sport or  
5 whatever the level, you know, a school might have.

6 BY ATTORNEY SCRUGGS:

7 Q. So Doctor, if we had a male that identifies as  
8 female, it wouldn't be problematic to exclude that  
9 person from the female collegiate track team?

10 ATTORNEY VEROFF: Objection.

11 THE WITNESS: I think it depends on what  
12 the rules are in place, but if this transgender female  
13 meets the criteria and participates, right, that that is  
14 great.

15 BY ATTORNEY SCRUGGS:

16 Q. Well, again, assuming the rules are --- the  
17 rules of West Virginia are in place and says we now  
18 require all natal males to participate on the male team  
19 rather than on the female team, why can't we just tell  
20 the male college athletes to identify as females, they  
21 can go play on the club sports club team?

22 ATTORNEY VEROFF: Objection.

23 THE WITNESS: I think the transgender  
24 female athlete should have the right to participate on

1   whichever of those levels that they want to participate  
2   on. Right. The female D-1 team the sports team, the  
3   intermural team, they should have the right to try out  
4   as long as they meet the criteria that's in place.

5   BY ATTORNEY SCRUGGS:

6       Q.     Do you feel that Ms. Armistead should have the  
7   right to participate on the female women's soccer team?

8               ATTORNEY VEROFF: Objection.

9               THE WITNESS: Yes.

10   BY ATTORNEY SCRUGGS:

11       Q.     Doctor Fry, you would agree that if Ms.  
12   Armistead lost her spot on the soccer team to a male  
13   soccer player who identifies as female, Ms. Armistead  
14   would be deprived of the positive experiences associated  
15   with participating on that soccer team?

16               ATTORNEY VEROFF: Objection.

17               THE WITNESS: Right. If the transgender  
18   female is meeting the criteria that's in place by the  
19   NCAA, right, and then --- and makes the team and someone  
20   else doesn't make the team, right, I would say that's  
21   --- that's part of sport just like Ms. Armistead, I  
22   think, right, if she tried out and she didn't make the  
23   team because there's other cisfemale athletes that had a  
24   better performance or made the team, but either way she

1 would be missing out on the benefits if she didn't make  
2 the team.

3 BY ATTORNEY SCRUGGS:

4 Q. And that's not my point. I understand your  
5 argument. I understand that, as a matter of fact, she  
6 would lose out on the benefits and opportunities for  
7 participating on the sports team.

8 ATTORNEY VEROFF: I'm going to object to  
9 Counsel testifying.

10 BY ATTORNEY SCRUGGS:

11 Q. I'm asking if you agree with that?

12 ATTORNEY VEROFF: Objection to the  
13 question.

14 THE WITNESS: Yeah, I'm agreeing that  
15 athletes try out for teams, and when they don't make it,  
16 it's hard for them to reap the benefits of being part of  
17 their team if they, you know, don't participate and  
18 aren't part of that.

19 ATTORNEY SCRUGGS: I understand. I have  
20 no further questions. Thank you, Dr. Fry.

21 ATTORNEY CROPP: This is Jeffrey Cropp,  
22 Counsel for Defendant Harrison County Board of  
23 Education, and Superintendant Dora Stutler. I have no  
24 questions.

1                    ATTORNEY GREEN: This is Roberta Green on  
2 behalf of West Virginia Secondary School Activities  
3 Commission. I have no questions.

4                    ATTORNEY MORGAN: This is Kelly Morgan on  
5 behalf of the West Virginia Board of Education and  
6 Superintendant Burch. I have no questions.

7                    ATTORNEY TRYON: And this is Dave Tryon.  
8 I have no further questions, unless the Defense Counsel  
9 does. Excuse me, Plaintiff's Counsel.

10                   ATTORNEY VEROFF: No, we don't have any  
11 further questions. The witness will read and sign  
12 later.

13                   VIDEOGRAPHER: Okay.

14                   If there's no further questions that  
15 concludes this deposition. The current time reads  
16 5:38 p.m. Eastern Standard Time.

17                   \* \* \* \* \*

18                   VIDEOTAPED DEPOSITION CONCLUDED AT 5:38 P.M.

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COMMONWEALTH OF PENNSYLVANIA)

COUNTY OF PHILADELPHIA )

CERTIFICATE

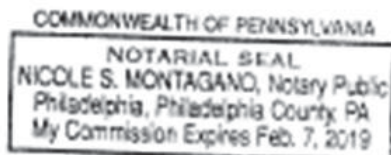
I, Nicole Montagano, a Notary Public in and  
for the Commonwealth of Pennsylvania, do hereby certify:

That the foregoing proceedings, deposition  
of Mary D. Fry, Ph.D., was reported by me on March 29,  
2022 and that I, Nicole Montagano, read this transcript,  
and that I attest that this transcript is a true and  
accurate record of the proceeding.

That the witness was first duly sworn to  
testify to the truth, the whole truth, and nothing but  
the truth and that the foregoing deposition was taken at  
the time and place stated herein.

I further certify that I am not a relative,  
employee or attorney of any of the parties, nor a  
relative or employee of counsel, and that I am in no way  
interested directly or indirectly in this action.

Dated the 4 day of April, 2022



*Nicole Montagano*

Nicole S. Montagano,  
Court Reporter|



IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

**Exhibit 1**

B.P.J., by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY  
BOARD OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent,

*Defendants.*

Civil Action No.

Hon.

**DECLARATION OF PROFESSOR MARY D. FRY, PHD**

1. I have been retained by counsel for Plaintiff as an expert in connection with the above-captioned litigation.

2. The purpose of this declaration is to offer my expert opinion on: (1) the psychological and behavioral benefits of youth sports; and (2) the conditions that lend themselves to youth participating in athletics and accessing those benefits when they do participate.

3. I have knowledge of the matters stated in this declaration. I have collected and cite to relevant literature concerning the issues that arise in this litigation in the body of this declaration and in the attached bibliography.

4. In preparing this declaration, I reviewed West Virginia HB 3293, the bill at issue in this litigation.

5. In preparing this declaration, I relied on my education and training, my professional and research experience, and my knowledge of the literature in the pertinent fields. The materials I have relied upon in preparing this declaration are the same types of materials that experts in my field of study regularly rely upon when forming opinions on the subject. I may wish to supplement these opinions or the bases for them as a result of new research or publications or in response to statements and issues that may arise in my area of expertise.

#### **PROFESSIONAL BACKGROUND**

6. I am a Professor in the Department of Health, Sport & Exercise Sciences at the University of Kansas in Lawrence, Kansas. A true and correct copy of my CV is attached hereto as Exhibit A.

7. In 1984, I graduated from Texas Wesleyan University in Fort Worth, Texas with a Bachelor of Science in Physical Education. After graduating, I spent about five years teaching physical education and coaching tennis at schools and summer camps in Texas and North Carolina.

8. I graduated with a Master of Science in Sport Psychology/Pedagogy from the University of North Carolina in Greensboro in 1990. Then, in 1994, I graduated with a doctorate in Sport & Exercise Psychology from Purdue University. From 1994 to 1999, I served as an Assistant Professor in the University of Memphis's Department of Human Movement Sciences and Education. I continued at the same institution from 1999 to 2007 as an Associate Professor in the Department of Human & Sport Sciences. I joined the faculty of the University of Kansas in 2007, where I continue to teach and research as a Professor today.

9. I have authored or coauthored 63 papers in peer-reviewed journals, including many studies in sport psychology and youth athlete motivation. I have coauthored five book chapters and one book, titled *A Coach's Guide to Maximizing the Youth Sport Experience: Work Hard and Be Kind*. I have also given 116 presentations on my research at both international and national conferences, as well as dozens of local and regional presentations.

10. I have taught and/or developed six undergraduate level courses and 12 graduate level courses in sport and exercise psychology. The courses I developed include Psychosocial Aspects of Sport, Applied Sport Psychology, Developmental Perspectives in Youth Sport, and Special Course: Sport Psychology Within Youth Sport.

11. On a national level, I have served with the Association of Applied Sport Psychology ("AASP") as a member of the Program Review Committee (2008-present), a Subject Matter Expert for the Certification Exam Committee (2018), and a member of the Ad-Hoc Future of AASP Committee (2012-2015). For the AASP, I have served as an Executive Board Member (2004-2006), two three-year terms as a member of the Social Psychology Section Committee (1996-99; 2001-2003), and as a member of the Dissertation Award Committee (1998 & 2002). I have also served on the Editorial Board for *Physical Activity Today* (1997-2001) and on the Program Review Committee for the American Alliance of Health, Physical Education, Recreation & Dance (2009-2017), in addition to chairing the Committee in 2010. I also serve on the National Advisory Board for the Positive Coaching Alliance.

12. I have undertaken editorial roles on professional journals within my field, including as Associate Editor (2009-2012) and Editorial Board Member (2000-2009; 2013-present) for the *Journal of Applied Sport Psychology*; Associate Editor (2008-present) for the *Journal of Sport Psychology in Action*; Section Editor (2003-2006) and Reviewer (1994-present)

for the *Research Quarterly for Exercise and Sport*; and Editorial Board Member (2011-present) for *Sport, Exercise, and Performance Psychology*.

13. I have served on the Kansas University Certificate in Sport Committee (2017-2018), and the Kansas University Center for Undergraduate Research, Advisory Board (2016-2018), among other roles at the University.

14. I am, or have been, a member of several professional organizations, including the American Psychological Association (2017-present), the Kansas Alliance for Health, Physical Education, Recreation, & Dance (2008-present), the American Alliance for Health, Physical Education, Recreation, and Dance (1988-2017), and the North American Society for the Psychology of Sport and Physical Activity (1988-2000).

15. I also have experience applying sport psychology in the field, which include mental skills interventions for various athletes and teams, including with high school and university athletes (2018-present), a high school baseball team (2013-2018), a youth baseball team (2009-2011), a Division I collegiate volleyball team (2008-2010), a high school basketball team (2006-2007), and a Division I cross country team (2006).

16. I have not previously testified as an expert witness in either deposition or at trial.

17. I am being compensated at an hourly rate of \$250 per hour. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

### **MOTIVATION AND ATHLETICS**

18. There are many benefits to young people from participating in athletic activities, discussed further below. But understanding what motivates youth to participate in athletics in the first place is essential for understanding how they can access these benefits. One critical way to

increase participation in athletics is to understand the factors that motivate individuals to stay engaged at different ages and in different contexts. Understanding motivation also helps to explain how the benefits youth derive from participating in sport translate to other aspects of their lives.

19. In simple terms, motivation is the desire to do activities. More formally, it is defined as “the process that influences initiation, direction, magnitude, perseverance, continuation, and quality of goal-directed behavior” (Maehr & Zusho, 2009). Motivation is about why, how, when, and in what circumstances people employ their resources.

20. One of the most-researched motivational theories in the field of sport psychology is achievement goal perspective theory (“AGPT”), which was developed to address how motivation could be heightened and sustained over time (Nicholls 1984, 1989). AGPT includes three components that together can work to optimize motivation among all individuals, including youth participating in sports.

21. First is the developmental component of AGPT. Young children are incapable of accurately comparing their ability to others, overestimate their ability, and are naturally focused on their effort as a marker of success. By the time they enter adolescence, however, they are able to distinguish the concepts of effort, luck, and ability.

22. Second, around 12 years of age, children achieve a mature understanding of the concept of ability and at that time adopt their own personal definitions of success, or “goal orientations.” The primary goal orientations are task and ego. Individuals with a “high task orientation” define success based on their effort, improvement, and mastery of tasks over time. In contrast, a high ego orientation occurs when individuals define success in normative terms,

only feeling successful when they outperform others. Individuals are to some degree both task- and ego-oriented; in fact, they can be high and/or low in both orientations.

23. Third, motivations are shaped by outside factors, which can reinforce a task orientation as opposed to an ego orientation. Specifically, athletes' perceptions of the environment that is created by coaches (but can also be influenced by parents and teammates) (Ames, 1992a, 1992b; Nicholls, 1984, 1989) can be a caring and task-involving or ego-involving climate. A caring climate is one where athletes feel safe and welcome, comfortable, valued, and are treated with kindness and respect by all in the sport setting (Newton et al. 2007).

24. With the goal of increasing opportunities for participation in mind, AGPT provides important guidance about how to help each athlete maximize their sport experience and to increase opportunities within athletics for youth.

### **BENEFITS OF SPORT FOR YOUTH ATHLETES**

25. For youth student-athletes, athletics serve a different purpose than for athletes who participate in professional athletics or world elite competition. The National Collegiate Athletic Association (NCAA) estimates that there are 7.3 million high school student-athletes in the United States. Of those millions of athletes, only about 6% go on to compete at the college level in any division (with only about 2% earning an athletic scholarship).<sup>1</sup> By the numbers alone, the primary purpose of high school sports is not about preparing youth for college sports. For the 94% of high school athletes who do not compete in college as well as for those who do, youth sport creates a myriad of benefits (unrelated to preparing athletes to compete in college).

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<sup>1</sup> NCAA Recruiting Facts (March 2018), <https://www.ncaa.org/sites/default/files/Recruiting%20Fact%20Sheet%20WEB.pdf>.

**A. Athletes' Type of Goal Orientation Determines What Benefits They Derive from Youth Athletics.**

26. A high task orientation, described above in Paragraph 21, is the key to optimizing motivation over time because effort and improvement – the keys to task orientation – are variables that individuals can more easily control. In contrast, individuals high in ego orientation define success based on performance relative to others. High task orientation results in athletes' being more likely to seek challenge, exert high effort, and persist over time (Maehr & Zusho, 2009).

27. It should be noted that the research findings described below, which highlight the relationships between goal orientations and numerous outcome variables, have been consistent for both boys and girls. In other words, within the body of research on athletes' goal orientations, results across studies reveal that task orientation is more often positively correlated with adaptive outcomes (e.g., intrinsic motivation), and ego orientation is more often negatively associated with maladaptive outcomes (e.g., worry) for both boys and girls (Fry & Moore, 2019; Roberts, 2012; Roberts, Nerstad, & Lemyre, 2018).

28. Perhaps the strongest finding within the goal orientation research links a task orientation with high enjoyment. Throughout childhood and adolescence, and across a range of sports, athletes who define success based on their personal effort and improvement have more fun playing their sport than those high in ego orientation (Schneider, Harrington, & Tobar, 2017; Seifriz, Duda, & Chi, 1992; Stephens, 1998; Stuntz & Weiss, 2009; van de Pol & Kavussanu, 2011). Importantly, goal orientations are also associated with the sources of enjoyment athletes identify. For example, youth athletes with a high task orientation more often report experiencing enjoyment from learning and having positive team interactions. In contrast, athletes high in ego

orientation more often report experiencing enjoyment as a result of winning and having high perceived competence (Lochbaum & Roberts, 1993).

29. Another benefit of high task orientation in youth athletes is the strong and positive association with interpersonal and team dynamics (Balaguer, Duda, & Crespo, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005). Task orientation is positively correlated with peer acceptance, less conflict with peers, and greater satisfaction with the coach.

30. Athletes high in ego orientation report lower companionship and greater conflict with teammates (Balaguer et al., 1999), and there is no evidence to suggest they reap the benefits of enhanced social relationships that athletes with high task orientation do (Ommundsen et al., 2005).

31. Athletes high in task orientation also report greater confidence and perceived ability, and task orientation has been correlated with both self and team efficacy and greater perceived competence (Magyar & Feltz, 2003; Seifriz et al., 1992; Stuntz & Weiss, 2009). Further, athletes high in task orientation report utilizing more adaptive coping strategies (Kim, Duda, & Gano-Overway, 2011; McCarthy 2011). These adaptive outcomes have been found for middle school, high school, and collegiate athletes.

32. Ego orientation (i.e. the non-pejorative, descriptive term for defining success based on ability and performance outcomes), in contrast, is not correlated with perceived ability in general. Confidence of athletes high in ego orientation was more often based on their perceptions of ability and having a strong physical presence, whereas athletes high in task orientation based their perceptions of confidence on their sense of feeling well prepared and mentally strong (Magyar and Feltz, 2003). There is also a consistently significant relationship between ego orientation and anxiety (Lochbaum et al., 2016). Young athletes with high ego



orientation participating in a variety of sports have reported higher trait and state cognitive and somatic anxiety, as well as greater concentration disruption, maladaptive perfectionism, and concern over making mistakes (Grossbard, Cumming, Standage, Smith, & Smoll, 2007; Hall, Kerr, & Matthews, 1998; Ommundsen & Pedersen, 1999; Ommundsen et al., 2005; White & Zellner, 1996).

**B. Structuring Sport with a Caring and Task-Involving Climate Fosters High Task Orientation, Which Optimizes Benefits for Youth Athletes.**

33. A large body of research in sport psychology, and specifically youth sport, identifies how sport can be structured to help young athletes reap many physical, psychological, and social benefits from their participation in sport and physical activities (Duda, 2013; Fry & Hogue, 2018; Fry & Moore, 2019; Harwood, Keegan, Smith, & Raine, 2015; Roberts, 2013).

34. In youth sports, the climate created on individual athletes' teams, more than the identity of their opponents, determines whether and to what extent young athletes are deriving optimal benefits from sport and maintaining motivation to participate in sport. Overall, the best way to get youth athletes to participate in sports is to create a caring and task-motivated climate, which reinforces high task orientation and leads to the benefits described above. These outcomes help athletes have a sport experience that makes them want to keep playing sport, thereby deriving the benefit of sport more consistently and for longer periods of time. Again, within the motivational climate literature, the findings are consistent for both boys and girls, in that they both have more adaptive responses in a caring and task-involving climate and more problematic, maladaptive responses in ego-involving climates. (Fry & Hogue, 2018; Fry & Moore, 2019; Harwood et al., 2015; Roberts, 2012; Roberts, Nerstad, & Lemyre, 2018).

35. A caring and task-involving climate is one in which coaches do the following: recognize and reward effort and improvement; foster cooperation among teammates; make

everyone feel they play an important role on the team; treat mistakes as part of the learning process; and encourage an approach where everyone is treated with mutual kindness and respect.

36. When athletes perceive a caring and task-involving climate on their teams, they are more likely to have fun, exert high effort, experience intrinsic motivation, have better interpersonal relationships with coaches and athletes, display better sportsperson-like values and behaviors, have better psychological well-being, and perform better (Duda & Nicholls, 1992; Fry & Hogue, 2018; Iwasaki & Fry, 2013; Newton, Duda, & Yin, 2000; McDonald, Cote, Eys, & Deakin, 2011). In addition, there are positive and significant associations between perceptions of a caring climate in sport settings and the hope and happiness of youth, and negative relationships with depression and sadness (Fry et al., 2012), as well as the ability of youth athletes to monitor and control their affective responses. This self-regulation was found to contribute to athlete empathy, indicating that fostering more caring climates in sport settings may facilitate positive social interactions and character development (Gano-Overway et al., 2009). Elite adult athletes who are task-oriented and/or who perceive a task-involving climate are also significantly more likely to report not using performance-enhancing drugs (Allen, et al., 2015).

37. Youth involved in positive and supportive sport environments experience greater self-esteem, psychological well-being, and hope, with less depression, sadness, and burnout than those in less supportive environments. They have better emotional self-regulation, meaning they are more able to manage negative emotions, to keep things in perspective, and to feel and express joy when good things happen (Fry et al, 2012; Gano-Overway et al, 2009).

38. In contrast, where coaches reward only ability and performance outcome, foster rivalry among teammates, punish mistakes, and give most of the recognition to a few “stars,” they contribute to an ego-focused climate that can lead to athletes’ experiencing fewer adaptive

and positive motivational outcomes and greater negative outcomes. Ego-focused environments create greater acceptance of rough play, cheating, and aggressive behaviors in their sport (Boixados, Cruz, Torregrosa, & Valiente, 2004), and are less likely to lead to appropriate, desirable, and respectful behaviors within sport (Fry & Newton, 2003).

39. Athletes' perceptions of a caring and task-involving climate may also be linked to higher quality training and better performance outcomes, as researchers report more effective practice strategies in sport and physical education settings (Boyce, Gano-Overway, & Campbell, 2009; Iwasaki & Fry, 2016; Lochbaum et al., 2016). Some studies have revealed a direct association between perceptions of a task-involving climate to objective performance (Hogue, Fry, & Fry, 2017; Theeboom, De Knop, & Weiss, 1995; Xiang, Bruene, & McBride, 2004).

40. Young athletes have also had higher winning percentages on their teams and performed better on tasks when they perceived a task-involving (rather than ego-involving) climate (Cumming et al., 2007; Sarrazin, Roberts, Cury, Biddle, & Famose, 2002).

41. Athletes' perceptions of a task-involving climate were associated with less performance worry and escapism thoughts (Hatzigeorgiadis & Biddle, 2002). Often, mistakes and facing challenges present opportunities to learn and succeed in different ways (by improving oneself, for example). And in sport, much is unpredictable: An opponent's unexpected performance, the weather, and an illness, can drastically change a competition day. Being adaptive and focused on giving one's best effort can help athletes' overcome disappointment (Fry, et al., 2020; Fry & Moore, 2019).

42. Despite the ego-involving climate's emphasis on performance outcomes, results across studies suggest that the benefits of a task-involving climate may have a direct impact on athletic performance and ultimately improve performance outcomes (Jackson & Roberts, 1992;

McDonald, Cote, & Deakin, 2011). By contrast, no evidence currently points to an ego-involving climate leading to greater performance outcomes with young athletes.

43. Even for athletes who are themselves highly ego-oriented, and who prioritize winning and external rewards, a task-involving and caring climate is preferable. Such a climate encourages young athletes to orient themselves toward a task-involved model for motivation and away from the stress-inducing ego-orientation, which will in turn garner the young person the benefits associated with a task-orientation. For example, Division I college athletes who perceived a caring and task-involving climate on their teams reported having stronger mental skills including their use of goal setting; ability to concentrate, remain worry free, cope with adversity and peak under pressure; act with confidence; and be open to receiving feedback from coaches (Fry, Iwasaki, & Hogue, in press). These findings would suggest that athletes with strong mental skills might also perform better. Further, perceptions of an ego-involving climate have been linked to higher salivary cortisol responses (Hogue, Fry & Fry, 2017). Cortisol is an important and necessary hormone, but in excess it can break down muscle tissue and interfere with the immune system.

**EXCLUDING GROUPS FROM PARTICIPATING IN  
HIGH SCHOOL ATHLETICS WOULD DEPRIVE THEM AND THEIR TEAMMATES  
OF A WIDE RANGE OF EDUCATIONAL BENEFITS**

44. A goal of youth sport is to help young athletes have positive experiences across sport. This includes creating space for athletes to have fun, develop skills, make friends, increase their levels of physical activity, continue their participation over time, and learn valuable life lessons (Thompson, 2010). If athletes are arbitrarily excluded from youth sports, they are, in turn, deprived of those positive experiences and outcomes and their teammates are deprived of a genuinely task-involving and caring sports climate.

45. Athletes who participate in high school sport are more likely to finish college, and more likely to be actively engaged in planning for their future after their sport career ends (Chamberlin & Fry, 2020; Troutman & Defur, 2007). Many of the benefits to youth who participate in athletics are documented throughout life. For example, women who participated in high school sport see greater success in the business world (ESPNW & EY, 2017; Sasaki, 2020).

46. All youth benefit from a sport environment that is task-involving, which results in athletes taking on more challenging tasks (Stuntz & Weiss, 2009; van de Pol & Kavussanu, 2011), building stronger interpersonal dynamics (Balaguer, Duda, & Crespo, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005), reducing antisocial behavior (Kavussanu & Roberts, 2001; Stephens & Kavanagh, 2003), and acquiring greater confidence (Magyar & Feltz, 2003; Seifriz et al., 1992; Stuntz & Weiss, 2009).

47. Coaches and others involved in youth sport have a responsibility for creating the climate that is most conducive to encouraging young athletes to adopt a high task-orientation. Arbitrarily excluding athletes from their teams undermines a caring climate, which, in turn, diminishes the positive outcomes for all youth athletes. The negative outcomes apply not only to the athletes who are excluded, but to the other athletes on the team.

48. Excluding groups of athletes can also undermine the benefits of a high task-involving climate, as such a climate should help athletes develop strong interpersonal and team dynamics (Balaguer, Duda, & Crespo, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005). Fostering task orientation positively correlates with peer acceptance, less conflict with peers, and greater satisfaction with the coach. These outcomes help athletes have a sport experience that make them want to keep playing sport.

49. When young athletes are excluded from participating in youth sport, or are in a climate where they do not feel accepted or respected, they do not have the opportunity to reap these benefits.

**FOCUSING SOLELY ON PERFORMANCE OUTCOMES  
UNDERMINES THE BENEFITS OF YOUTH ATHLETICS**

50. When a team, league, or organization adopts an ego-promoting philosophy, and cares only about performance outcomes, the broader benefits of sport are diminished for all involved (both with regard to their future athletic careers and lives outside of sport). The overwhelming majority of high school athletes will never go on to compete in college, so focusing only on the highest-performing athletes compromises the other critical benefits of sports for youth.

51. Such a focus is stress-inducing and undermines the experience of the rest of the athletes who may train hard, improve, but may not be on the podium to receive a medal. The climate of youth sport must be geared to include everyone, including those who are not as skilled, so that teams are more likely to help every athlete maximize their potential. From an educational perspective, it is optimal to encourage all athletes to do the best that they can, and to help all athletes enjoy the sport that they love. Even among Division I collegiate athletes, athletes who perceived a task-involving climate on their teams reported higher academic and athletic satisfaction (Tudor & Ridpath, 2018).

52. Thus, the benefits associated with youth sport are not limited to whether athletes are winning competitions, where they are ranked in their sport, or what level of publicity they are getting. In fact, a focus exclusively on those things not only undermines an athlete's success in those areas but can compromise the holistic range of benefits derived from youth sport. Ultimately, athletes are more likely to reap the positive benefits associated with youth sports if

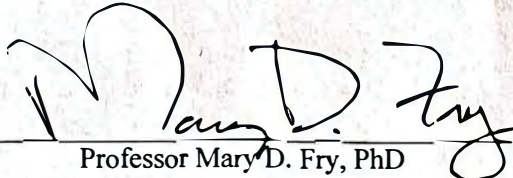


they are task-involved, which places greater emphasis on effort, than if they are ego-involved, which would put greater emphasis on trappings of individual success.

53. For coaches of youth athletes, one important message is that, for the overwhelming majority of people, the period of time that a person participates in organized athletics is short and maximizing the benefits of that participation is essential. As Jim Thompson, Founder and former-CEO of the Positive Coaching Alliance notes: "Here's the bottom line for parents. Your child's experience with youth sports will come to an end, and it may happen suddenly. If you are like me, you will look back and think, 'I wish I had enjoyed it more. I wish I hadn't obsessed so much about how well my child was performing, or the team's record, or whether he or she was playing as much as I wanted, or why the coach didn't play him or her in the right position. I wish I had just enjoyed the experience more.' Because the youth sports experience is so intense, we tend to forget how short it is and what a small amount of time parents and children get to spend together over the course of life."

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated: May 1, 2021

  
Professor Mary D. Fry, PhD

**Exhibit 2**

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J. by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF EDUCATION, HARRISON COUNTY BOARD OF EDUCATION, WEST VIRGINIA SECONDARY SCHOOL ACTIVITIES COMMISSION, W. CLAYTON BURCH in his official capacity as State Superintendent, DORA STUTLER in her official capacity as Harrison County Superintendent, and THE STATE OF WEST VIRGINIA,

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**EXPERT REPORT AND DECLARATION OF PROFESSOR MARY D. FRY, PHD**

1. I have been retained by counsel for Plaintiff as an expert in connection with the above-captioned litigation.

2. The purpose of this expert report and declaration is to offer my expert opinion on: (1) the psychological and behavioral benefits of sports for youth and young adults (including collegiate athletes); and (2) the conditions that lend themselves to youth and young adults participating in athletics and accessing those benefits when they do participate.



3. I have knowledge of the matters stated in this expert report and declaration. I have collected and cite to relevant literature concerning the issues that arise in this litigation in the body of this expert report and declaration and in the attached bibliography.

4. In preparing this expert report and declaration, I reviewed West Virginia H.B. 3293, the bill at issue in this litigation.

5. In preparing this expert report and declaration, I relied on my education and training, my professional and research experience, and my knowledge of the literature in the pertinent fields. The materials I have relied upon in preparing this expert report and declaration are the same types of materials that experts in my field of study regularly rely upon when forming opinions on the subject. I may wish to supplement these opinions or the bases for them as a result of new research or publications or in response to statements and issues that may arise in my area of expertise.

### **PROFESSIONAL BACKGROUND**

6. I am a Professor in the Department of Health, Sport & Exercise Sciences at the University of Kansas in Lawrence, Kansas. A true and correct copy of my Curriculum Vitae is attached hereto as Exhibit A.

7. In 1984, I graduated from Texas Wesleyan University in Fort Worth, Texas with a Bachelor of Science in Physical Education. After graduating, I spent about five years teaching physical education and coaching tennis at schools and summer camps in Texas and North Carolina.

8. I graduated with a Master of Science in Sport Psychology/Pedagogy from the University of North Carolina in Greensboro, North Carolina in 1990. Then, in 1994, I graduated with a doctorate in Sport & Exercise Psychology from Purdue University in West Lafayette, Indiana. From 1994 to 1999, I served as an Assistant Professor in the University of Memphis's

Department of Human Movement Sciences and Education. I continued at the same institution from 1999 to 2007 as an Associate Professor in the Department of Human & Sport Sciences. I joined the faculty of the University of Kansas in 2007, where I continue to teach and research as a Professor today.

9. I have authored or coauthored 69 papers in peer-reviewed journals, including many studies in sport psychology and youth athlete motivation. I have coauthored seven book chapters and one book, titled *A Coach's Guide to Maximizing the Youth Sport Experience: Work Hard and Be Kind*. I have also given 118 presentations on my research at both international and national conferences, as well as dozens of local and regional presentations.

10. I have taught and/or developed six undergraduate level courses and 12 graduate level courses in sport and exercise psychology. The courses I developed include Psychosocial Aspects of Sport, Applied Sport Psychology, Developmental Perspectives in Youth Sport, and Special Course: Sport Psychology Within Youth Sport.

11. On a national level, I have served with the Association of Applied Sport Psychology ("AASP") as a member of the Program Review Committee (2008-present), a Subject Matter Expert for the Certification Exam Committee (2018), and a member of the Ad-Hoc Future of AASP Committee (2012-2015). For the AASP, I have served as an Executive Board Member (2004-2006), two three-year terms as a member of the Social Psychology Section Committee (1996-99; 2001-2003), and as a member of the Dissertation Award Committee (1998; 2002). I have also served on the Editorial Board for *Physical Activity Today* (1997-2001) and on the Program Review Committee for the American Alliance of Health, Physical Education, Recreation & Dance (2009-2017), in addition to chairing the Committee in 2010. I also serve on the National Advisory Board for the Positive Coaching Alliance.

12. I have undertaken editorial roles on professional journals within my field, including as Associate Editor (2009-2012) and Editorial Board Member (2000-2009; 2013-present) for the *Journal of Applied Sport Psychology*; Associate Editor (2008-present) for the *Journal of Sport Psychology in Action*; Section Editor (2003-2006) and Reviewer (1994-present) for the *Research Quarterly for Exercise and Sport*; and Editorial Board Member (2011-present) for *Sport, Exercise, and Performance Psychology*.

13. I have served on the Kansas University Certificate in Sport Committee (2017-2018), and the Kansas University Center for Undergraduate Research, Advisory Board (2016-2018), among other roles at the University.

14. I am, or have been, a member of several professional organizations, including the American Psychological Association (2017-present), the Kansas Alliance for Health, Physical Education, Recreation, & Dance (2008-present), the American Alliance for Health, Physical Education, Recreation, and Dance (1988-2017), and the North American Society for the Psychology of Sport and Physical Activity (1988-2000).

15. I also have experience applying sport psychology in the field, which include mental skills interventions for various athletes and teams, including with high school and university athletes (2000-present), a high school baseball team (2013-2018), a youth baseball team (2009-2011), a Division I collegiate volleyball team (2008-2010), a high school basketball team (2006-2007), and a Division I cross-country team (2006).

16. I have not previously testified as an expert witness in either deposition or at trial.

17. I am being compensated at an hourly rate of \$250 per hour. My compensation does not depend on the outcome of this litigation, the opinions I express, or the testimony I provide.

**FOCUSING SOLELY ON PERFORMANCE OUTCOMES UNDERMINES THE  
BENEFITS OF SPORT FOR YOUTH AND YOUNG ADULT ATHLETES**

18. For youth and young adult student-athletes, athletics serve a different purpose than for athletes who participate in professional athletics or world elite competition. A myopic focus on winning in youth and young adult athletics ignores the other important benefits that school athletics offer young athletes, such as teamwork and camaraderie, which are advanced when all athletes have the opportunity to play the sport they love and reap the benefits of such participation.

19. The National Collegiate Athletic Association (NCAA) estimates that there are eight million high school student-athletes in the United States.<sup>1</sup> Of those millions of athletes, only about 6% go on to compete at the college level in any division (with only about 2% earning an athletic scholarship).<sup>2</sup> By the numbers alone, the primary purpose of high school sports is not about preparing youth for college sports. For the 93% of high school athletes who do not compete in college as well as for those who do, youth sport creates a myriad of benefits unrelated to preparing athletes to compete in college.

20. Then for collegiate athletics, most athletes do not go on to have athletic careers beyond college in an elite sports context. According to the NCAA: “Fewer than two percent of NCAA student-athletes go on to be professional athletes.”<sup>3</sup> That percentage does not include National Association of Intercollegiate Athletics (for small college sports) and junior college student-athletes, who are less likely to have professional sports careers. Accordingly, among total numbers of collegiate athletes in the United States, the total percentage of athletes who go on to participate in elite, professional athletics after college is even lower than two percent.

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<sup>1</sup> <https://www.ncaa.org/about/resources/research/estimated-probability-competing-college-athletics>

<sup>2</sup> *Id.*; <https://www.ncaa.org/student-athletes/future/scholarships>

<sup>3</sup> <https://www.nfhs.org/media/886012/recruiting-fact-sheet-web.pdf>

21. There are many benefits to young people from participating in athletic activities, discussed further herein. But understanding what motivates youth and young adults to participate in athletics in the first place is essential for understanding how they can access these benefits. One critical way to increase participation in athletics is to understand the factors that motivate individuals to stay engaged at different ages and in different contexts. Understanding motivation also helps to explain how the benefits youth and young adults derive from participating in sport translate to other aspects of their lives.

22. In simple terms, motivation is the desire to do activities. More formally, it is defined as “the process that influences initiation, direction, magnitude, perseverance, continuation, and quality of goal-directed behavior” (Maehr & Zusho, 2009). Motivation is about why, how, when, and in what circumstances people employ their resources.

23. One of the most-researched motivational theories in the field of sport psychology is achievement goal perspective theory, which was developed to address how motivation could be heightened and sustained over time (Nicholls 1984, 1989). Achievement goal perspective theory includes three components that together can work to optimize motivation among all individuals, including youth and young adults participating in sports.

24. First is the developmental component of achievement goal perspective theory. Young children are incapable of accurately comparing their ability to others, overestimate their ability, and are naturally focused on their effort as a marker of success. By the time they enter adolescence, however, they are able to distinguish the concepts of effort, luck, and ability.

25. Second, around 12 years of age, children achieve a mature understanding of the concept of ability and at that time adopt their own personal definitions of success, or “goal orientations.” The primary goal orientations are task and ego. Individuals with a “high task

orientation” define success based on their effort, improvement, and mastery of tasks over time. In contrast, a high ego orientation occurs when individuals define success in normative terms, only feeling successful when they outperform others. Individuals are to some degree both task- and ego-oriented; in fact, they can be high and/or low in both orientations.

26. Third, motivations are shaped by outside factors, which can reinforce a task orientation as opposed to an ego orientation. Specifically, athletes can perceive the environment that is created by coaches (but can also be influenced by parents and teammates) (Ames, 1992a, 1992b; Nicholls, 1984, 1989) as a task-involving or ego-involving climate. When the environment created by coaches and others is a caring environment, athletes are more likely to perceive the overall climate as task-involving. A caring environment is one where athletes feel safe, welcome, comfortable, and valued, and are treated with kindness and respect by all in the sport setting (Newton et al., 2007). A climate that is both task-involving and caring is one in which coaches do the following: recognize and reward effort and improvement; foster cooperation among teammates; make everyone feel they play an important role on the team; treat mistakes as part of the learning process; and encourage an atmosphere where everyone is treated with mutual kindness and respect.

27. A high task orientation, described above in Paragraph 25 is the key to optimizing motivation over time because effort and improvement – the keys to task orientation – are variables that individuals can more easily control. High task orientation results in athletes being more likely to seek challenge, exert high effort, and persist over time (Maehr & Zusho, 2009).

28. Perhaps the strongest finding within the goal orientation research links task orientation with high enjoyment. Throughout childhood and adolescence, and across a range of sports, athletes who define success based on their personal effort and improvement have more fun

playing their sport than those high in ego orientation (Schneider, Harrington, & Tobar, 2017; Seifriz, Duda, & Chi, 1992; Stephens, 1998; Stuntz & Weiss, 2009; van de Pol & Kavussanu, 2011). Importantly, goal orientations are also associated with the sources of enjoyment athletes identify. For example, youth athletes with a high task orientation more often report experiencing enjoyment from learning and having positive team interactions. In contrast, athletes high in ego orientation more often report experiencing enjoyment as a result of winning and having high perceived competence (Lochbaum & Roberts, 1993).

29. Another benefit of high task orientation in youth athletes is the strong and positive association with interpersonal and team dynamics (Balaguer, Duda, & Crespo, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005). Task orientation is positively correlated with peer acceptance, less conflict with peers, and greater satisfaction with the coach.

30. Athletes high in task orientation also report greater confidence and perceived ability, and task orientation has been correlated with both self and team efficacy and greater perceived competence (Magyar & Feltz, 2003; Seifriz et al., 1992; Stuntz & Weiss, 2009). Further, athletes high in task orientation report utilizing more adaptive coping strategies (Kim, Duda, & Gano-Overway, 2011; McCarthy, 2011). These adaptive outcomes have been found for middle school, high school, and collegiate athletes.

31. By contrast, ego orientation (i.e., the non-pejorative, descriptive term for defining success based on ability and performance outcomes), is not correlated with perceived ability in general. Confidence of athletes high in ego orientation was more often based on their perceptions of ability and having a strong physical presence, whereas athletes high in task orientation based their perceptions of confidence on their sense of feeling well prepared and mentally strong (Magyar and Feltz, 2003).

32. Athletes high in ego orientation report lower companionship and greater conflict with teammates (Balaguer et al., 1999), and there is no evidence to suggest they reap the benefits of enhanced social relationships that athletes with high task orientation do (Ommundsen et al., 2005). Despite the ego-involving climate's emphasis on performance outcomes, results across studies suggest that the benefits of a task-involving climate may have a direct impact on athletic performance and ultimately improve performance outcomes (Jackson & Roberts, 1992; McDonald, Cote, & Deakin, 2011). By contrast, no evidence currently points to an ego-involving climate leading to greater performance outcomes with young athletes.

33. There is also a consistently significant relationship between ego orientation and anxiety (Lochbaum et al., 2016). Young athletes with high ego orientation participating in a variety of sports have reported higher trait and state cognitive and somatic anxiety, as well as greater concentration disruption, maladaptive perfectionism, and concern over making mistakes (Grossbard, Cumming, Standage, Smith, & Smoll, 2007; Hall, Kerr, & Matthews, 1998; Ommundsen & Pedersen, 1999; Ommundsen et al., 2005; White & Zellner, 1996).

34. Even for athletes who are themselves highly ego-oriented, and who prioritize winning and external rewards, a task-involving and caring climate is preferable. Such a climate encourages young athletes to orient themselves toward a task-involved model for motivation and away from the stress-inducing ego-orientation, which will in turn garner the young person the benefits associated with a task-orientation. For example, Division I college athletes who perceived a task-involving climate on their teams reported having stronger mental skills including their use of goal setting, ability to concentrate, remain worry free, cope with adversity and peak under pressure, act with confidence, and be open to receiving feedback from coaches (Fry, Iwasaki, & Hogue, 2021). These findings would suggest that athletes with strong mental skills might also



perform better. Further, perceptions of an ego-involving climate have been linked to higher salivary cortisol responses (Hogue, Fry, & Fry, 2017). Cortisol is an important and necessary hormone, but in excess it can break down muscle tissue and interfere with the immune system.

35. Thus, the benefits associated with youth and young adult sport are not limited to whether athletes are winning competitions, where they are ranked in their sport, or what level of publicity they are getting. In fact, a focus exclusively on those things not only undermines an athlete's success in those areas but can compromise the holistic range of benefits derived from youth and young adult sport. Ultimately, athletes are more likely to reap the positive benefits associated with youth and young adult sports if they are task-involved, which places greater emphasis on effort, than if they are ego-involved, which would put greater emphasis on trappings of individual success.

36. It should be noted that the research findings described above, which highlight the relationships between goal orientations and numerous outcome variables, have been consistent for both boys and girls. In other words, within the body of research on athletes' goal orientations, results across studies reveal that task orientation is more often positively correlated with adaptive outcomes (e.g., intrinsic motivation), and ego orientation is more often negatively associated with maladaptive outcomes (e.g., worry) for both boys and girls (Fry & Moore, 2019; Roberts, 2012; Roberts, Nerstad, & Lemyre, 2018).

**EXCLUDING TRANSGENDER STUDENTS FROM PARTICIPATING IN  
YOUTH AND YOUNG ADULT ATHLETICS WOULD DEPRIVE THEM AND THEIR  
TEAMMATES OF A WIDE RANGE OF BENEFITS**

37. A goal of youth sport is to help young athletes have positive experiences across sport. This includes creating space for athletes to have fun, develop skills, make friends, increase their levels of physical activity, continue their participation over time, and learn valuable life

lessons (Thompson, 2010). If transgender students are arbitrarily excluded from youth sports, they are, in turn, deprived of those positive experiences and outcomes and their teammates are deprived of a genuinely optimal sport experience.

38. Athletes who participate in high school sport are more likely to finish college, and more likely to be actively engaged in planning for their future after their sport career ends (Chamberlin & Fry, 2020; Troutman & Defur, 2007). Many of the benefits to youth who participate in athletics are documented throughout life. For example, women who participated in high school sport see greater success in the business world (ESPNW & EY, 2017; Sasaki, 2020). When athletes are excluded from participating in sport, or are in a climate where they do not feel accepted or respected, they do not have the opportunity to reap these benefits.

39. In addition, arbitrarily excluding transgender students from teams undermines a task-involving climate, which, in turn, diminishes the positive outcomes for all youth and collegiate athletes. (Balaguer, Duda, & Crespo, 1999; Ommundsen, Roberts, Lemyre, & Miller, 2005). Fostering task orientation positively correlates with peer acceptance, less conflict with peers, and greater satisfaction with the coach. These outcomes help athletes have a sport experience that make them want to keep playing sport. Because these positive benefits are fostered in a task-involving environment, arbitrary exclusions can cause harm not only to the athletes who are excluded, but also to the other athletes on the team.

40. When a team, league, or organization adopts an ego-promoting philosophy, and cares only about performance outcomes, the broader benefits of sport are diminished for all involved (both with regard to their future athletic careers and lives outside of sport). As noted above, the overwhelming majority of high school athletes will never go on to compete in college, and the overwhelming majority of college athletes will never go on to compete on professional

teams. Focusing only on the highest-performing athletes or post-graduate elite athletics compromises the other critical benefits of sports for youth and young adults.

41. The climate of youth sport must be geared to include all participants, so that teams are more likely to help every athlete maximize their potential. From an educational perspective, it is optimal to encourage all athletes to do the best that they can, and to help all athletes enjoy the sport that they love.

42. For coaches of youth and young adult athletes, one important message is that, for the overwhelming majority of people, the period of time that a person participates in organized athletics is short and maximizing the benefits of that participation is essential. As Jim Thompson, Founder and former-CEO of the Positive Coaching Alliance notes: “Here’s the bottom line for parents. Your child’s experience with youth sports will come to an end, and it may happen suddenly. If you are like me, you will look back and think, ‘I wish I had enjoyed it more. I wish I hadn’t obsessed so much about how well my child was performing, or the team’s record, or whether he or she was playing as much as I wanted, or why the coach didn’t play him or her in the right position. I wish I had just enjoyed the experience more.’ Because the youth sports experience is so intense, we tend to forget how short it is and what a small amount of time parents and children get to spend together over the course of life.”

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Dated: January 24, 2022



Professor Mary D. Fry, PhD

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created motivational Climate and the coach-athlete relationship in team sports. *Sport Psychologist*, 22(4), 423–438. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=s3h&AN=35719365&lang=es&site=ehost-live&scope=site>

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sport: The role of social orientations. *Psychology of Sport and Exercise*, 10, 255–262.

Theeboom, M., Knop, P. De, & Weiss, M. R. (1995). Motivational climate, psychological responses, and motor skill development in children's sport: A field-based intervention study. *Journal of Sport & Exercise*, 17, 294–311.

Thompson, J. (2010). Positive coaching: Building character and self-esteem through sports. New York: Brown & Benchmark.

Troutman, K., & Dufur, M. (2007). From high school jocks to college grads: Assessing the long-term effects of high school sport participation on females' educational attainment. *Youth & Society*, 38(4), 443–462. doi:10.1177/0044118X06290651

Tudor, M. L., & Ridpath, B. D. (2018). Does the perceived motivational climate significantly predict academic and/or athletic motivation among NCAA Division I college athletes. *Journal of Contemporary Athletics*, 12(4), 291–307.

van De Pol, P. K. C., Kavussanu, M., (2011). Achievement goals and motivational responses in tennis: Does the context matter? *Psychology of Sport & Exercise*, 12, 176–183.

White, S., & Zellner (1996). The relationship between goal orientation, beliefs about the causes of sport success, and trait anxiety among high school, intercollegiate, and recreational sport participants. *Sport Psychologist*, 10, 58–72.

Xiang, P., Bruene, A., & McBride, R. E. (2004). Using achievement goal theory to assess an elementary physical education running program. *Journal of School Health*, 74, 220–225.



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# EXHIBIT A

**CURRICULUM VITAE**

**NAME:** Mary D. Fry (Previously Mary D. Walling before 8/95)  
**DEPARTMENT:** Health, Sport & Exercise Sciences  
**RANK:** Professor

**DEPARTMENT ADDRESS:**

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 Robinson Center, Room 161F  
 1301 Sunnyside Ave.  
 University of Kansas  
 Lawrence, KS 66045  
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**EDUCATION**

DEGREE	DISCIPLINE	INSTITUTION	YEAR
BS	Physical Education	Texas Wesleyan University	1984
MS	Sport Psychology/Pedagogy	University of North Carolina- Greensboro	1990
PhD	Sport & Exercise Psychology	Purdue University	1994

**EXPERIENCE**

RANK/POSITION PERIOD	DEPARTMENT/DIVISION	INSTITUTION/ORG.
Professor	Health, Sport & Exercise Sci	University of Kansas 2019
Associate Professor	Health, Sport & Exercise Sci	University of Kansas 2007-2019
Associate Professor	Human & Sport Sciences	University of Memphis 1999-2007
Assistant Professor	Human Movement Sciences & Education	University of Memphis 1994-1999
Editorial Assistant	Journal of Applied Sport Psychology	1992-1994
Associate Investigator	Indiana Youth Risk Behavior	Indiana Dept. of Education/Centers for Disease Control Study for Disease Control 1992
Research Consultant	Grant to Study Youth Sports	National Institute for Fitness & Sport Indianapolis, IN 1991
Teaching Assistant	Health, Kinesiology & Leisure Studies	Purdue University 1990-1992
Teaching Assistant	Sport & Exercise Science	U. North Carolina-Greensboro 1989-1990

RANK/POSITION	DEPARTMENT/DIVISION	INSTITUTION/ORG.	PERIOD
Middle School Teacher	Physical Education	Allen Middle School Greensboro, NC	1988-89
High School Teacher	Physical Education/English & Head Tennis Coach	Martin High School Arlington, TX	1987- 88
High School Teacher	Physical Education/English & Head Tennis Coach	Richland High School Fort Worth, TX	1984-87
Instructor	University of Texas-Austin	Summer Tennis Camps	1988 & 1989

**Certification.** Secondary Teacher Certification in English and Physical Education in the State of Texas, 1984.

## **HONORS/AWARDS:**

Coleman Griffith Lecture, Association of Applied Sport Psychology (2021)  
 Del Shankel Teaching Excellence Award (Recipient 2021; Finalist 2018, 2019)  
 Budig Teaching Professorship, University of Kansas (2018)  
 Outstanding Mentor, McNair Scholars Program (2017)  
 KU Woman of Distinction, (2014-2015)  
 Joyce Elaine Pauls Morgan HSES Teaching Award (2013)  
 Budig Teaching Professorship, Nominee (2012)  
 Bird Outstanding Mentor Award, Nominee (2011)  
 Service Award, School of Education, University of Kansas, Nominee (2011)  
 KU Keeler Professorship, University of Kansas (2010).  
 Fellow, Association of Applied Sport Psychology (2009).  
 Outstanding Research Article published in *Research Quarterly for Exercise & Sport* (1997).  
 Presented by the Research Consortium of the American Alliance of Health, Physical Education, Recreation, & Dance.  
 Outstanding Doctoral Dissertation, North American Society for the Psychology of Physical Activity (1994).  
 Student Representative, CIC Big Ten Conference "Capstone of Knowledge" hosted by Michigan University, December, 1992.

## **RESEARCH PUBLICATIONS**

### **Refereed Journal Publications**

Easton, L., **Fry, M. D.** Hogue, C. M., & Iwasaki, S. (in press). Goal orientations predict exercisers' effort and enjoyment while engaged in exercise and reasons for using a fitness tracker. *Acta Facultatis Educationis Physicae Universitatis Comenianae*.  
**Fry, M. D.**, Iwasaki, S., & Hogue, C. M. (in press). The relationship between the perceived motivational climate in elite collegiate sport and athlete psychological coping skills. *Journal of Clinical Sport Psychology*.  
 Hogue, C. M., **Fry, M. D.**, & Fry, A. C. (in press). The protective impact of learning to juggle in a caring, task-involving climate versus and ego-involving climate on participants' inflammation, cortisol, and psychological responses. *International Journal of Sport and Exercise Psychology*.  
 Iwasaki, S., **Fry, M. D.**, & Hogue, C.M. (in press). The relationship among male high school athletes' perceptions of the motivational climate, mindful engagement, and coachability. *Journal of Clinical Sport Psychology*.  
 Scott, C., **Fry, M.D.**, Wineinger, T., & Iwasaki, S., & Fry, M. D. (in press). Creating an optimal motivational team climate to help collegiate athletes thrive during the COVID-19 pandemic. *Journal of Sport Psychology in Action*.  
 Scott, C., **Fry, M. D.**, Weingartner, H., & Wineinger, T. (in press). Collegiate sport club athletes' psychological well-being and perceptions of their team climate. *Recreational Sports Journal*.

- Wineinger, T., **Fry, M. D.**, & Moore, E. W. (2021). Validation of climate and motivational measures for use in the biology laboratory setting. *Journal of Biological Education*.
- Brown, T. C., **Fry, M. D.**, Breske, M., Iwasaki, S., & Wilkinson, T. (2019). Motivational climate and athletes' likelihood of reporting concussions in a youth competitive soccer league. *Journal of Sport Behavior*, 42(1), 29-47.
- Fry, M. D.**, Reid, C., Iwasaki, S., & Thompson, J. (2019). Bridging theory, research, and practice in youth sports: Sport Psychology's Partnership with Positive Coaching Alliance to enhance youth sport. *Journal of Sport Psychology in Action*, 10, 1-10.
- Hogue, C. M. **Fry, M. D.**, & Iwasaki, S. (2019). The impact of the perceived motivational climate in physical education on adolescent greater life stress, coping appraisals, and experience of shame. *Sport, Exercise, & Performance Psychology*, 8, 273-289.
- Glover, K., & **Fry, M. D.** (2018). Helping WIN provide a winning environment for girls in their summer camps. *Journal of Sport Psychology in Action*, 9, 1-12.
- Miller, S., & **Fry, M. D.** (2018). Relationship between climate to body esteem and social physique anxiety within college physical activity classes. *Journal of Clinical Sport Psychology*, 12, 525-543.
- Wineinger, T. O. & **Fry, M. D.** (2018). The power of a caring/task-involving climate to help students find their life's passion. *Kansas Association for Health, Physical Education, Recreation, & Dance Journal*, 90 (1), 49-56.
- Breske, M. P., **Fry, M. D.**, Fry, A. C., & Hogue, C. M. (2017). The effects of goal priming on cortisol responses in an ego-involving climate. *Psychology of Sport and Exercise*, 32, 74-82.
- Brown, T. C., **Fry, M. D.**, & Moore, E. W. G. (2017). A motivational climate intervention and exercise-related outcomes: A longitudinal perspective. *Motivation Science*, 3, 337-353
- Chamberlin, J. & **Fry, M. D.** (2017). High school athletes' perceptions of the motivational climate in their off-season training programs. *Journal of Strength and Conditioning Research*, 31, 736-742.
- Fontana, M. S., & **Fry, M. D.** (2017). Creating and validating the shame in sport questionnaire. *Journal of Sport Behavior*, 40, 278-296.
- Hogue, C. M., **Fry, M. D.**, & Fry, A. C. (2017). The differential impact of motivational climates on adolescents' psychological and physiological stress responses. *Psychology of Sport and Exercise*, 30, 118-127. <http://dx.doi.org/10.1016/j.psychsport.2017.02.004>
- Fontana, M. S., **Fry, M. D.**, & Cramer, E. (2017). Exploring the relationship between athletes' perceptions of the motivational climate to their compassion, self-compassion, shame, and pride in adult recreational sport. *Measurement in Physical Education and Exercise Science*, 21, 101-111.
- Moore, E. W., G., & **Fry, M. D.** (2017). National franchise members' perceptions of the exercise psychosocial environment, ownership, and satisfaction. *Sport, Exercise, & Performance Psychology*, 6, 188-198.
- Moore, E. G. W., & **Fry, M. D.** (2017). Physical education students' ownership, empowerment, and satisfaction with PE and physical activity. *Research Quarterly for Exercise and Sport*, 88, 468-478. <https://doi.org/10.1080/02701367.2017.1372557>
- Iwasaki, S., & **Fry, M. D.** (2016). Female adolescent soccer players' perceived motivational climate, goal orientations, and mindful engagement. *Psychology of Sport & Exercise*, 27, 222-231. <http://dx.doi.org/10.1016/j.psychsport.2016.09.002>

- Claunch, J., & **Fry, M. D.** (2016). Native American football coaches' experience of a motivational climate collaboration with sport psychology researchers. *International Journal of Sport Science & Coaching*, 11, 482-495. DOI: 10.1177/1747954116655047
- Brown, T. C., & **Fry, M. D.** (2015). Effects of an intervention with recreation center staff to foster a caring, task-involving climate. *Journal of Clinical Sport Psychology*, 9, 41-58.
- Fontana, M., Bass, J., & **Fry, M. D.** (2015). From Smith Center to Coney Island: Examining the coaching climate in the United States sporting culture. *Journal of Contemporary Athletics*, 9, 211-226.
- Fry, M. D.**, & Brown, T. C. (2015). A caring/task-involving climate intervention for youth sport camp leaders. *Kansas Association for Health, Physical Education, and Recreation Journal*.
- Moore, E. W. G., Brown, T. C., & **Fry, M. D.** (2015). Psychometric Properties of the Abbreviated Perceived Motivational Climate in Exercise Questionnaire. *Measurement in Physical Education and Exercise Science*, 19(4), 186-199.
- Poux, K., & **Fry, M. D.** (2015). Athletes' perceptions of their team motivational climate, career exploration and engagement, and athletic identity. *Journal of Clinical Sport Psychology*, 9, 360-372. <http://dx.doi.org/10.1123/jcsp.2014-0050>
- Brown, T. C. & **Fry, M. D.** (2014). College exercise class climates, physical self concept, and psychological well-being. *Journal of Clinical Sport Psychology*, 8, 299-313.
- Brown, T. C. & **Fry, M. D.** (2014). Motivational climate, staff and members' behaviors, and members' psychological well-being at a large national fitness franchise. *Research Quarterly for Exercise and Sport*, 85, 208-217.
- Moore, W. E. G. & **Fry, M. D.** (2014). Psychometric support for the Ownership in Exercise and Empowerment in Exercise Scales. *Measurement in Physical Education and exercise Science*, 18, 1-17.
- Brown, T. C., & **Fry, M. D.** (2014). Evaluating the pilot of Strong Girls: A life skills/physical activity program for third and fourth grade girls. *Journal of Applied Sport Psychology*, 26, 52-65.
- Brown, T. C. & **Fry, M. D.** (2013). Association between females' perceptions of college aerobic class motivational climates and their responses. *Women & Health*, 58, 843-857.
- Brown, T. C., **Fry, M. D.**, & Little, T. (2013). The psychometric properties of the Perceived Motivational Climate in Exercise Questionnaire. *Measurement in Physical Education and Exercise Science* 17(1), 17-39.
- Hogue, C. M., Pornprasertmanit, S., **Fry, M. D.**, Rhemtulla, M., & Little, T. (2013). Planned missing data designs for spline growth models in salivary cortisol research. *Measurement in Physical Education and Exercise Science*, 17, 310-325.
- Iwasaki, S., & **Fry, M. D.** (2013). Evaluations of youth sport programs requested by sport administrators. *The Sport Psychologist*, 27, 360-371.
- Hogue, C.M., **Fry, M. D.**, Fry, A.C., Pressman, S. D. (2013). The influence of a motivational climate intervention on participants' salivary cortisol and psychological responses. *Journal of Sport and Exercise Psychology*, 35, 85-97.
- Fry, M. D.**, Guivernau, M., Kim, M., Newton, M., Gano-Overway, L., & Magyar, M. (2012). Youth perceptions of a caring climate, emotional regulation, and psychological well-being. *Sport, Exercise, & Performance Psychology*, 1(1), 44-57.
- Huddleston, H., **Fry, M. D.**, & Brown, T. C. (2012). Corporate fitness members' perceptions of the environment and their intrinsic motivation. *Revista de Psiocologia del Deporte*.



- 21(1),15-23.
- Brown, T.C., & Fry, M. D. (2011). Helping members commit to exercise: Specific strategies to impact the climate at fitness centers. *Journal of Sport Psychology in Action*, 2, 70-80.
- Brown, T. C., & Fry, M. D. (2011). Strong Girls: A physical activity/life skills intervention for girls transitioning to junior high. *Journal of Sport Psychology in Action*, 2, 57-69.
- Fry, M. D. (2010). Creating a positive climate for young athletes from day 1. *Journal of Sport Psychology in Action*, 1(1), 33-41.
- Fry, M. D., & Gano-Overway, L. (2010). Exploring the contribution of the caring climate to the youth sport experience. *Journal of Applied Sport Psychology*, 22(3), 294-304.
- Dodd, R., Brown, T., & Fry, M. D. (2010). Young athlete's perceptions of their coaches' and teammates' caring and uncaring behaviors. *Kansas Association of Health Physical Education Recreation and Dance Journal*, 83(1), 38-45.
- Binkley, S. E., Fry, M. D., & Brown, T.C. (2009). The relationship of college students' perceptions of their BMI and weight status to their physical self-concept. *American Journal of Health Education*, 40, 139-145.
- Gano-Overway, L. A., Magyar, T. M., Kim, M., Newton, M., Fry, M. D., & Guivernau, M. R. (2009). Influence of caring youth sport contexts on efficacy-related beliefs and social behaviors. *Developmental Psychology*, 45, 329-340.
- Newton, M., Fry, M.D., Gano-Overway, L., Kim, M., Watson, D., & Givernau, M. (2007). Psychometric properties of the Contextual Caring Scale in a physical activity setting. *Revista de Psicología del Deporte*, 16, 67-84.
- Newton, M., Watson, D., Fry, M., Gano-Overway, L., Kim, M., & Givernau, M. (2007). The impact of caring in physical activity. *Urban Review*, 39, 281-299.
- Haneishi, K., Fry A.C., Moore C.A., Schilling B.K., Li Y., and Fry M.D. (2007). Cortisol and stress responses during a game and practice in female collegiate soccer players". *Journal of Strength and Conditioning Research*, 21, 583-588.
- Magyar, M., Kim, M., Givernau, M., Gano-Overway, L., Newton, M., & Fry, M. (2007). The influence of leader efficacy and emotional intelligence on personal caring. *Journal of Teaching in Physical Education*, 26, 310-319.
- Bone, J., & Fry, M.D. (2006). The influence of injured athletes' perceptions of social support from ATCs on athletes' beliefs about rehabilitation. *Journal of Sport Rehabilitation*, 15, 156-167.
- Fry, A.C., Ciroslan D., Fry M.D., LeRoux C.D., Schilling B.K., and Chiu L.Z.F. (2006), Anthropometric and performance variables discriminating elite junior weightlifters. *Journal of Strength and Conditioning Research*, 20, 861-866.
- Smith, S., Fry, M. D., Ethington, C., & Li, Y. (2005). The effects of athletes' perceptions of their coaching behaviors on their perceptions of the motivational climate. *Journal of Applied Sport Psychology*, 17, 1-8.
- Fry, M. D., & Newton, M. (2003). Application of achievement goal theory in an urban youth tennis setting. *Journal of Applied Sport Psychology* 15, 50-66.
- Abma, C. L., Fry, M. D., Li, Y., & Relyea, G. (2002). Differences in imagery content and imagery ability between high and low confident track and field athletes. *Journal of Applied Sport Psychology*, 13, 341-349.
- Walling, M. D., Duda, J. L., & Crawford, T. (2002). Goal orientations, outcome, and responses to youth sport competition among high/low perceived ability athletes. *International Journal of Sport Psychology*, 14, 140-156.

- Fry, M. D.** [2000]. A developmental examination of children's understanding of task difficulty in the physical domain. *Journal of Applied Sport Psychology*, 12, 180-202.
- Fry, M. D.** (2000). A developmental analysis of children's and adolescents' understanding of luck and ability in the physical domain. *Journal of Sport and Exercise Psychology*, 22, 145-166.
- Fry, A.C., Webber, J. M., Weiss, L.W., **Fry, M. D.**, & Li, Y. (2000). Impaired performances with excessive high-intensity free-weight training. *Journal of Strength and Conditioning Research*, 14, 54-61.
- Fry, M. D.**, & Lattimore, D. (2000). Fostering a positive motivational climate in physical education. *Tennessee Educational Leadership Journal*, 27, 39-43.
- Fry, M. D.**, & Fry, A. C. (1999). Goal perspectives and motivational responses of elite junior weightlifters. *Journal of Strength and Conditioning Research*, 13, 311-317.
- Newton, M., & **Fry, M. D.** (1998). Senior Olympians achievement goals and beliefs concerning success. *Journal of Aging and Physical Activity*, 6, 256-270.
- Fry, M. D.** (1998). Al Oerter: An Olympian's views as seen from a sport psychology perspective. *Strength and Conditioning*, 20, 7-14.
- Fry, M. D.** & Duda, J. L. (1997). A developmental examination of children's understanding of effort and ability in the physical and academic domains. *Research Quarterly for Exercise and Sport*, 66, 331-344.
- Walling, M. D.**, & Duda, J. L. (1995). Goals and their associations with beliefs about success in and perceptions of the purpose of physical education. *Journal of Teaching in Physical Education*, 14, 140-156.
- Walling, M. D.**, & Duda, J. L. (1995). Motivating kids: Balance learning and fun. *Sport Psychology Training Bulletin*, 4, 1-8.
- Duda, J. L., Chi, L., Newton, M. L., **Walling, M. D.**, & Catley, D. (1995). Task and ego orientation and intrinsic motivation in sport. *International Journal of Sport Psychology*, 26, 40-63.
- Walling, M. D.**, & Martinek, T. (1995). Learned helplessness in a sixth-grade physical education student: A case study. *Journal of Teaching in Physical Education*, 14, 454-466.
- Walling, M. D.**, Duda, J. L., & Chi, L. (1993). The perceived motivational climate in sport questionnaire: Construct and predictive validity. *Journal of Sport and Exercise Psychology*, 15, 172-183.

### **Invited Book Chapters**

- Gano-Overway, L., & **Fry, M. D.** (in press). Caring climates. In L. Davis, R. Keegan, & S. Jowett (Eds.), *Social Psychology of Sport* (Second Edition). Champaign, IL: Human Kinetics.
- Fry, M. D.**, & Fontana, M. (in press). Did you hear the one about the hilarious professor? Yeah, me neither: Incorporating humor in sport psychology to enhance motivation and relieve stress. In K. Vaidya (Ed.), *Teach Exercise & Sport With a Sense of Humor: Why and How to Be a Funnier and More Effective Exercise & Sport Teacher and Laugh All the Way to Your Classroom?* Curious Academic Publishing.

- Fry, M. D., & Hogue, C. M.** (2021). Foundational psychological theories, models, and constructs. *Certified Mental Performance Consultant Essentials Resource Guide*. Association for Applied Sport Psychology.
- Fry, M. D., & Moore, E. W. G.** (2019). *Motivation in sport: Theory to application*. In M. H. Anshel (Ed.), T. Petrie, E. Labbe, S. Petruzello, & J. Steinfeldt (Assoc. Eds.), *APA handbook of sport and exercise psychology: Vol. 1. Sport psychology*. Washington DC: American Psychological Association.
- Fry, M. D., & Hogue, C. M.** (2018). Psychological considerations for children in sport and performance. In Oliver Braddick (Ed.), *Oxford Research Encyclopedia of Psychology*. New York: Oxford University Press.
- Fry, M. D.** (2014). Sport and Exercise Psychology as a Venue to Develop “Difference Makers”. In K. Vaidya (Ed.), *Exercise and Sports for the Curious: Why Study Exercise and Sports*. Curious Academic Publishing.
- Fry, M. D.** (2001). The development of motivation in children. In G. Roberts (Ed.), *Motivation in sport and exercise (2<sup>nd</sup> Ed.)*, pp. 51-78, Champaign, IL: Human Kinetics.

#### **Book**

- Fry, M. D., Gano-Overway, L., Guivernau, M., Kim, M., & Newton, M.** (2020). *A Coach's Guide to Maximizing the Youth Sport Experience: Work Hard and Be Kind*. NY: Routledge.

#### **PRESENTATIONS**

##### **Invited International Presentations**

- Fry, M. D.** (2019). *Achievement goal perspective theory as a framework for interventions in sport and physical activity*. Autonomous University of Baja California; Ensenada, Mexico.
- Fry, M. D.** (2019). *Utilizing goal orientations as a lens to optimize athletes' motivation*. Autonomous University of Baja California; Ensenada, Mexico.
- Fry, M. D.** (2019). *Building a caring and task-involving climate in sport through words, activities, and core values*. Autonomous University of Baja California; Ensenada, Mexico.
- Fry, M. D.** (2019). *Team building to foster positive relationships on sport teams*. Autonomous University of Baja California; Ensenada, Mexico.
- Fry, M. D.** (2016). *The power of a caring and task-involving climate in sport*. Children International; Guatemala City, Guatemala/.
- Fry, M. D.** (2005, March). *Creating a positive motivational climate in physical activity settings*. Sao Paulo, Brazil.
- Duda, J. L., & **Walling, M. D.** (1993, November). *Toward a developmental theory of motivation in sport*. University of Barcelona, Barcelona, Spain.
- Walling, M. D.** (1993, November). *The examination of Nicholls' developmental theory of motivation in the physical domain*. University of Valencia, Valencia, Spain.
- Walling, M. D.** (1993, November). *Motivational aspects in physical education for school-age Children*. National Physical Education Institute, Lleida, Spain.
- Duda, J. L., & **Walling, M. D.** (1993, November). *A conceptual and empirical examination of the motivational climate created by coaches*. University of Barcelona, Barcelona, Spain.



**Refereed Presentations at National Conferences**

- Scott, C., **Fry, M. D.**, Wineinger, T. O., & Iwasaki, S. (2021). *Staying positive during the COVID-19 Pandemic: The impact of collegiate team climate*. Association for Applied Sport Psychology, Virtual.
- Wineinger, T. O., Rosen, D., & **Fry, M. D.** (2021). *The influence of a motivational intervention on participants' physiological measures of effort and muscle performance*. Association for Applied Sport Psychology, Virtual.
- Scott, C., **Fry, M. D.**, Wineinger, T., & Weingartner, H. (2020). *Collegiate sport club athletes' perceptions of the climate on their teams and indices of their psychological well-being*. Association for Applied Sport Psychology, Virtual.
- Wineinger, T. O., & **Fry, M. D.** (2020). *A sport psychology lab partners with the Women's Intersport Network (WIN) to optimize young girls' sport camp experiences*. Association for Applied Sport Psychology, Virtual.
- Fry, M. D.**, Claunch, J., Hogue, C. M., Iwasaki, S., & Peyneta, I. (2019). *A coaching education collaboration for American Indian Youth Sport Coaches on the Zuni Reservation*. Association for Applied Sport Psychology. Portland, OR.
- Moore, E. W. G., & **Fry, M. D.** (2018). *Elementary physical education students' motivational climate perceptions predict goal orientations and physical education satisfaction*. International Society of Behavioral Nutrition and Physical Activity. Hong Kong.
- Pan, T. Y., Davis, A. M., Atchley, R. A., Forbush, K. T., Wallace, D. P., Savage, C. R., & **Fry, M.D.** (2018). *The longitudinal relationship between obesity and depression in children*. American Psychological Association, San Francisco, CA.
- Warlick, C., Krieschok, T., Frey, B., Kerr, B., . . . & **Fry, M. D.** (2018). *Does hope matter? Examining a popular positive psychology construct in a DBT intensive-outpatient community health population*. Association for Behavioral and Cognitive Therapies.
- Breske, M., **Fry, M. D.**, A., & Hogue, C. M. (2017). *The effects of goal priming on cortisol responses in an ego-involving climate*. Association for Applied Sport Psychology, Orlando, FL.
- Chamberlin, J., **Fry, M. D.**, & Iwasaki, S. (2017). *The influence of high school athletes' perceptions of the motivational climate on athletic identity and academic endeavors*. Association for Applied Sport Psychology, Orlando, FL.
- Easton, L., **Fry, M. D.**, & Iwasaki, S. (2017). *The relationship of fitness center members' goal orientations and perceptions of the motivational climate to variables related to well-being and motivational responses*. Association for Applied Sport Psychology, Orlando, FL.
- Fontana, M. & **Fry, M. D.** (2017). *Exploring the relationship between motivational climate and shame*. Association for Applied Sport Psychology, Orlando, FL.
- Fry, M. D.**, Thompson, J., Iwasaki, S., & Reid, C. (2017). *Bridging theory, research, and practice in youth sports: sport psychology's partnership with positive coaching alliance to enhance youth sport*. Association for Applied Sport Psychology, Orlando, FL.
- Glover, K., **Fry, M. D.**, & Weingartner, H. (2017). *Helping a women's intersport network provide a winning experience for girls in their summer sport camps*, Association for Applied Sport Psychology, Orlando, FL.

- Iwasaki, S., & **Fry, M. D.** (2017). *An exploration of the relationship among female adolescent athletes' perceptions of the motivational climate, goal orientation, refocusing, and peak ability*. International Society of Sport Psychology 14<sup>th</sup> World Congress, Sevilla, Spain.
- Tyler, E., Warlick, C., Cole, B., & **Fry, M. D.** (2017). *Collegiate student-athletes' perceptions of their sport team climate and level of hope*. Association for Applied Sport Psychology, Orlando, FL.
- Tyler, E., Warlick, C., Cole, B., & **Fry, M. D.** (2017). *Relationship among student-athletes' perceptions of the climate, locker room talk, and sexual behaviors*. Association for Applied Sport Psychology, Orlando, FL.
- Hogue, C. M., **Fry, M. D.**, & Fry, A. C. (2017). *Adolescents' Physiological Stress Responses to Motivational Climate in a Physical Education Setting*. Society for Physical Education and Health, Boston, MA.
- Claunch, J. & **Fry, M. D.** (2016). *Setting the stage for a motivational climate collaboration*. Association for Applied Sport Psychology, Phoenix, AZ.
- Chamberlin, J., **Fry, M. D.**, & Iwasaki, S. (2016). *High school athletes' perceptions of the motivational climate in their off-season Training Programs*. Association for Applied Sport Psychology, Phoenix, AZ.
- Easton, L., Iwasaki, S., & **Fry, M. D.** (2016). *The relationship of members' perceptions of the motivational climate to their Psychological well-being at a university medical center fitness facility*. Association for Applied Sport Psychology, Phoenix, AZ.
- Fry, M. D.**, Iwasaki, S., Vanorsby, H., & Breske, M. (2016). *Masters' swimmers' perceptions of the climate in their training facilities and their motivational responses*. Association for Applied Sport Psychology, Phoenix, AZ.
- Fry, M. D.**, Solomon, G., Iwasaki, S., Madeson, M., Vanorsby, H., Meisinger, R., & Haberer, J. (2016). *Division I athletes' perceptions of their team climate, mental skills, and mindfulness*. Association for Applied Sport Psychology, Phoenix, AZ.
- Hogue, C. M., **Fry, M. D.**, & Fry, A. C. (2016). *Physiological and psychological stress responses to a motivational climate intervention*. Association for Applied Sport Psychology, Phoenix, AZ.
- Fontana, M., & **Fry, M. D.** (2016). *Creating and validating the Shame in Sport Questionnaire*. Association for Applied Sport Psychology, Phoenix, AZ.
- Hogue, C. M., & **Fry, M. D.** (2016). *Leader observations of participant behaviors during a motivational climate intervention: A qualitative investigation*. Association for Applied Sport Psychology, Phoenix, AZ.
- Iwasaki, S., & **Fry, M. D.** (2016). *Male High School Athletes' Perceptions of Their Team Climate and Mindful Engagement*. Association for Applied Sport Psychology, Phoenix, AZ.
- Iwasaki, S., **Fry, M. D.**, Vanorsby, H., Breske, M. (2016). *Master swimmers' perceptions of the climate in their training facilities and their motivational responses*. Association for Applied Sport Psychology, Phoenix, AZ.
- Brown, T. C., M. S., **Fry, M. D.**, Breske, M., Iwasaki, S., & Wilkinson, T. (2015). *High school athletes' perceptions of their sport team climate and their willingness to report concussion symptoms*. Association for Applied Sport Psychology, Indianapolis, IN.
- Fry, M. D.**, Brown, T. C., Iwasaki, S., Breske, M., & Wilkinson, T. (2015). *Middle school athletes' perceptions of their sport team climate and their willingness to report concussion symptoms*. Association for Applied Sport Psychology, Indianapolis, IN.

- Fry, M. D., & Easton, L.** (2015). *Health in Action: Helping students design creative interventions onsite*. Kansas Alliance for Physical Education, Health, Recreation, & Dance, Wichita, KS.
- Fontana, M. S., Iwasaki, S., Hogue, C., Claunch, J., Poux, K., & **Fry, M. D.** (2014). *Initiating mental skills training with a high school freshman baseball*. Association for Applied Sport Psychology, Las Vegas, NE.
- Fry, A.C., **Fry, M. D.**, Sterczala, A. J., Chiu, L. Z. F., Schilling, B., & Weiss, L. W. (2014). *High power resistance exercise overreaching can be monitored with a training questionnaire*. National Strength and Conditioning Association, Las Vegas, NE.
- Medina, R, **Fry, M. D.**, & Iwasaki, S. (2014). *Youngsters' perceptions of the climate and their experiences in recreational exercise classes*. Association for Applied Sport Psychology, Las Vegas, NE.
- Rosen, D., & **Fry, M. D.** (2014). *Motivational climate and seniors' experiences in group exercise classes*. Association for Applied Sport Psychology, Las Vegas, NE.
- Hogue, C. M., & **Fry, M. D.** (2013). *A qualitative examination of participant reactions to a motivational climate intervention*. Association for Applied Sport Psychology, New Orleans, LA.
- Kwon, S., & **Fry, M. D.** (2013). *Mediational role of interest and intrinsic motivation between perceived caring climate and satisfaction and attitudes among physical education students*. Association for Applied Sport Psychology, New Orleans, LA.
- Moore, E. W. G., & **Fry, M. D.** (2013). *PE teachers' perspective on a motivational climate professional development session*. Association for Applied Sport Psychology, New Orleans, LA.
- Claunch, J. & **Fry, M. D.** (2013). *Transformative learning experience: Collegiate football coaches' perceptions of participating in a motivational climate intervention*. Association for Applied Sport Psychology, New Orleans, LA.
- Moore, E. W. G., & **Fry, M. D.** (2012). *Goal orientations, motivational climate, and outcomes in physical education across one semester*. Association for Applied Sport Psychology to held in Atlanta, GA.
- Kwon, S., & **Fry, M. D.** (2012). *The change of physical educators' enjoyment and intrinsic motivation of track and field through PST*. Association for Applied Sport Psychology, Atlanta, GA.
- Iwasaki, S., & **Fry, M. D.** (2012). *Physical education students' perceptions of the climate and their psychological well-being*. Association for Applied Sport Psychology, Atlanta, GA.
- Hogue, CM., **Fry, M.D.**, Fry, A.C., & Pressman, S. D. (2012). *Participant salivary cortisol and psychological responses to a motivational climate intervention*. Association for Applied Sport Psychology, Atlanta, GA.
- Fry, M. D.**, Brown, T. C., & Iwasaki, S. (2012). *Girls' self perceptions after participating in a positive life skills/physical activity program*. Association for Applied Sport Psychology, Atlanta, GA.
- Brown, T. C., & **Fry, M. D.** (2012). *Results of a caring, task-involving climate intervention at a recreation center*. Association for Applied Sport Psychology, Atlanta, GA.
- Kwon, S., & **Fry, M. D.** (2011). *The effects of athletes' self-management on their self-confidence*. Association for Applied Sport Psychology, Honolulu, HI.
- Andre, M. J., Fry, A.C., Gallagher, P. M., Vardiman, P., **Fry, M. D.** Kudrna, B., Gandy-Moody,

- N., & McCartney, M. (2011). *The effects of a pre-workout caffeine supplement on endogenous growth hormone levels*. A presentation made at the meeting of the National Strength and Conditioning Association, Las Vegas, NE.
- Hogue, C. M., Iwasaki, S., & Fry, M. D. (2011). *A case study of a physical activity/mental skills training intervention with a young athlete*. Association for Applied Sport Psychology, Honolulu, HI.
- Iwasaki, S., & Fry, M. D. (2011). *The exploration of motivational climate in a youth sport basketball camp*. Association for Applied Sport Psychology, Honolulu, HI.
- Fry, M. D. (2011). *From the Strong Girls' viewpoints: Research results from semester 1*. Association for Applied Sport Psychology, Honolulu, HI.
- Fry, M. D. (2011). *The exercise climate: An introduction to the research on examining task-involving and caring climates in the exercise domain*. Association for Applied Sport Psychology, Honolulu, HI.
- Fry, M. D., Hogue, C. M., Sauer, S. (2011). *Using digital storytelling as a creative tool in health*. American Alliance of Health, Physical Education, Recreation, & Dance, San Diego, CA.
- Kwon, S., & Fry, M. D. (2010). *Relationship of exercisers' perceptions of the motivational climate to their flow experience*. Association of Applied Sport Psychology, Providence, RI.
- Iwasaki, S., Merczek, K., & Fry, M. D. (2010). *Young athletes' experiences in a volleyball camp*. Association of Applied Sport Psychology, Providence, RI.
- Iwasaki, S., Sogabe, A., Fry, M. D., & Christensen, E. (2010, June). *Differences in aggression and social skills among judo and non-judo practitioners*. American College of Sports Medicine, Baltimore, MD.
- Hogue, C. M., Fry, M. D., & Brown, T. C. (2010). *Incorporating team building activities in a summer day camp for children: Lessons learned*. Association of Applied Sport Psychology, Providence, RI.
- Brown, T. C., & Fry, M. D. (2010). *Caring climate intervention for sport skills and fitness camp leaders*. Association of Applied Sport Psychology, Providence, RI.
- Brown, T. C., & Fry, M. D. (2010). *Teaching life skills in a physical activity after-school program*. American School Health Association, Kansas City, MO.
- Moore, E. W., & Fry, M. D. (2009). *The effect of a caring and task-involving climate on student empowerment and ownership in physical activity classes*. Association for Applied Sport Psychology, Salt Lake City, UT.
- Kwon, S., & Fry, M. D. (2009). *Members' perceptions of their fitness club climate and their exercise flow*. Association for Applied Sport Psychology, Salt Lake City, UT.
- Hogue, C. M., Fry, M. D., & Dodd, R. (2009). *Athletes' perceptions of the climate at their training centers and their motivational responses*. Association for Applied Sport Psychology, Salt Lake City, UT.
- Fry, M. D. (2009). *From theory to practice: Creating positive and caring environments in the real world*. Association for Applied Sport Psychology, Salt Lake City, UT.
- Brown, T. C., & Fry, M. D. (2009). *Students' perceptions of their exercise class environment and their psychological well-being*. Association for Applied Sport Psychology, Salt Lake City, UT.
- Marshall, K., Stephens, L., Grindle, V., Fry, M. D., & Li, Y. (2009). *Mental imagery and EEG*



- activity in elite and novice collegiate soccer players.* Association for Applied Sport Psychology to be, Tampa, FL.
- Brown, T. C., & **Fry, M. D.** (2009). *Participants' perceptions of a caring and positive climate in their exercise classes.* American Alliance of Health, Physical Education, Recreation, & Dance, Tampa, FL.
- Fry, M. D.**, Dodd, R. K., & Brown, T. C. (2008). *Young athletes' perceptions of their coaches' and teammates' caring and uncaring behaviors.* Association for Applied Sport Psychology, St. Louis, MO.
- Binkley, S.E., & **Fry, M. D.** (2007). *The relationship of college students' perceptions of their BMI and weight status to their physical self-concept.* Association for Applied Sport Psychology, Louisville, KY.
- Smith, H., **Fry, M.D.**, Li, Y., & Weiss, L. (2006). *The relationship of anxiety and self-confidence to treadmill exercise tolerance tests performance by sedentary obese women.* Association for the Advancement of Applied Sport Psychology, Miami, FL.
- McCarty, L., **Fry, M.D.**, & Curly, C. (2006). *The relationship of a caring climate to motivational responses and psychological well-being in youth baseball.* Association for the Advancement of Applied Sport Psychology, Miami, FL.
- Gano-Overway, L. A., Newton, M., Magyar, AM., **Fry, M. D.**, Kim, M., & Guivernau, M. (2006). *Caring, self-regulatory efficacy, empathic efficacy, and prosocial/antisocial behaviors in a physical activity setting.* Association for the Advancement of Applied Sport Psychology, Miami, FL.
- Fry, A.C., Haneishi, K., Moore, C.A., Schilling, B.K., Li, Y., & **Fry, M.D.** (2006). *Cortisol and stress responses during a game and practice in female collegiate soccer players.* National Conference on Student Assessment, Washington, D.C.
- Bricker, J. B., & **Fry, M. D.** (2005). *The influence of injured athletes' perceptions of social support from their certified athletic trainers on athletes' beliefs about rehabilitation.* Association for the Advancement of Applied Sport Psychology, Vancouver, British Columbia, Canada.
- Magyar, M., Guivernau, M., Gano-Overway, L., Newton, M., **Fry, M.D.**, Kim, M., & Watson, D. (2005). *Exploring the relationship between the caring climate and achievement goal theory among underserved youth in physical activity.* American Alliance of Health, Physical Education, Recreation & Dance, Chicago, IL.
- Fry, M.D.**, & Newton, M. (2004, September). *The development of the Caring Climate Questionnaire.* Association for the Advancement of Applied Sport Psychology, Minneapolis, MN.
- Smith, S., **Fry, M.D.**, & Ethington, C. (2004, September). *The effect of female athletes' perceptions of their coaches' behaviors on their perceptions of the motivational climate.* Association for the Advancement of Applied Sport Psychology, Minneapolis, MN.
- McCay, K., & **Fry, MD.** (2004, September). *The examination of goal perspective theory in relationship to measures of psychological well-being.* Association for the Advancement of Applied Sport Psychology, Minneapolis, MN.
- McCay, K., & **Fry, M.D.** (2004, March). *Predictors of adolescent depression: The role of physical activity and body image.* Society of Behavioral Medicine, Baltimore, MD.
- Henry, H., & **Fry, M.D.** (2003, October). *Corporate fitness members' perceptions of the*

*motivational climate, their intrinsic motivation, and perceptions of being valued by their employer.* Association for the Advancement of Applied Sport Psychology, Philadelphia, PA.

**Fry, M.D.,** Pittman, L., McCay, K., & Wendell, M. (2003, October). *A qualitative examination of underserved 4th grade girls' views about physical education.* Association for the Advancement of Applied Sport Psychology, Philadelphia, PA.

**Fry, M. D.,** Abma, C., Wood, J., & Melland, B. (2002, October). *The effects of an after-school physical activity and life skills program on 4th graders' self concept, motivational perspectives, and fitness levels.* Association for the Advancement of Applied Sport Psychology, Tucson, AZ.

Abma, C., & **Fry, M. D.** (2002, October). *The effects of an imagery intervention on the trait confidence levels of female college volleyball players.* Association for the Advancement of Applied Sport Psychology, Tucson, AZ.

Duda, J.L., Smith, M., & **Fry, M. D.** (2002, June). *An examination of learned helpless responses among young children engaged in physical tasks.* North American Society for the Psychology of Sport and Physical Activity, Baltimore, MD.

Newton, M., **Fry, M.D.,** & Bernhardt, P. (2001, October). *Examination of the interactive relationship of goal orientations, perceptions of the motivational climate, and perceived ability in youth tennis players.* Association for the Advancement of Applied Sport Psychology, Orlando, FL.

Abma, C. & **Fry, M. D.** (2001, May). *A qualitative examination of underserved 8th grade female students' attitudes about physical education.* 10th World Congress of Sport Psychology held in Skiathos, Greece.

Lattimore, D., **Fry, M. D.,** & Balas, C. (2000, October). *Students' perceptions of the motivational climate and their motivational responses in physical education.* Association for the Advancement of Applied Sport Psychology, Nashville, TN.

**Fry, M. D.,** Lattimore, D., & Balas, C. (2000, October). *A developmental examination of children's accuracy in judging their physical ability in physical education.* Association for the Advancement of Applied Sport Psychology, Nashville, TN.

**Fry, M.D.,** & Newton, M. (1999, September). *Goal orientations, perceptions of the motivational climate, and motivational responses of urban youth tennis players.* Association for the Advancement of Applied Sport Psychology, Banff, Canada.

**Fry, M. D.,** Lattimore, D., & Balas, C. (1999, September). *A developmental analysis of conceptions of effort and physical ability among underserved youth.* Association for the Advancement of Applied Sport Psychology, Banff, Canada.

Harber, M. P., **Fry, M. D.,** & Fry, A. C. (1998). *Sources of stress identified by elite collegiate weightlifters.* A paper presented at the annual meeting of the National Strength and Conditioning Association, Nashville, TN.

**Fry, M. D.,** Fry, A. C., & Newton, M. (1997, September). *Sources of stress identified by elite junior weightlifters.* Association for the Advancement of Applied Sport Psychology, San Diego, CA.

Newton, M., **Fry, M. D.,** & Sandberg, J. (1997). *Goal orientations and purposes of sport and beliefs concerning success among senior Olympians.* North American Society for the Psychology of Sport and Physical Activity, Denver, CO.

**Fry, M. D.** (1997, March). *Symposium: Goal perspectives in physical education and sport:*

- Theory into practice*. American Alliance for Health, Physical Education, Recreation, and Dance, St. Louis, MO.
- Fry, M. D.** (1996, October). *Children's understanding of luck and ability: A developmental analysis*. Association for the Advancement of Applied Sport Psychology, Williamsburg, VA.
- Fry, M. D.** (1996, October). *The motivational climate in sport and physical education: An introduction to theory and research*. Association for the Advancement of Applied Sport Psychology, Williamsburg, VA.
- Fry, M. D., & Fry, A. C.** (1996, June). *Goal perspectives and motivational responses of elite junior weightlifters*. National Strength and Conditioning Association, Atlanta, GA.
- Fry, M. D., & Alexander, C.** (1996, June). *Children's understanding of task difficulty: A developmental analysis*. North American Society for the Psychology of Sport and Physical Activity, Cleveland's House, Canada.
- Duda, J. L., & Walling, M. D.** (1995, October). *Views about the Motivational climate and their self perceptions/affective correlates: The case for young elite female gymnasts*. Association for the Advancement of Applied Sport Psychology, New Orleans, LA.
- Newton, M. L., & Walling, M. D.** (1995, October). Goal orientations and beliefs about the causes of success among senior Olympic games participants. North American Society for the Psychology of Sport and Physical Activity, Asilomar, CA.
- Walling, M. D.** (1994, October). *Developmental differences in children's views regarding physical competence*. Association for the Advancement of Applied Sport Psychology, Lake Tahoe, NV.
- Walling, M. D., & Duda, J. L.** (1994, June). *Children's understanding of effort and ability in the physical domain*. North American Society for the Psychology of Sport and Physical Activity, Clearwater Beach, FL.
- Walling, M. D., Duda, J. L., Newton, M., & White, S.** (1993, October). *The Task and Ego Orientation in Sport Questionnaire: Further analysis with youth sport participants*. Association for the Advancement of Applied Sport Psychology, Montreal, CANADA.
- Walling, M. D., & Duda, J. L.** (1993, March). *Goals and their associations with beliefs about success in and perceptions of the purpose of physical education*. American Alliance for Health, Physical Education, Recreation, and Dance, Washington, DC.
- Walling, M. D.** (1993, February). *Children's conceptions of effort and ability in the physical domain: A dissertation in progress*. Midwest Sport Psychology Symposium, Miami University, Oxford, OH.
- Walling, M. D., Duda, J. L., & Crawford, T.** (1992, October). *The relationship between goal orientations and positive attitudes toward sport and exercise among young athletes*. Association for the Advancement of Applied Sport Psychology, Colorado Springs, CO.
- Walling, M. D., Duda, J. L., & Crawford, T.** (1992, June). *The psychometric properties of the perceived motivational climate in sport questionnaire: Further investigation*. North American Society for the Psychology of Sport and Physical Activity, Pittsburgh, PA.
- Walling, M. D., Crawford, T., Duda, J. L., & Wigglesworth, J.** (1992, April). *Are we having fun yet and will we want to play again?: The interrelationships between goal perspectives and other motivational variables in youth sport athletes*. American Alliance for Health, Physical Education, Recreation, and Dance, Indianapolis, IN.
- Walling, M. D., & Catley, D.** (1992, April). *Jack and Jill in physical education class: Do they*

*think their instructor treats them differently?* American Alliance for Health, Physical Education, Recreation, and Dance, Indianapolis, IN.

**Walling, M. D., & Catley, D.** (1992, February). *Sex role stereotyping among college instructors and students' perceptions of instructor gender bias.* Midwest Sport Psychology Symposium, Purdue University, West Lafayette, IN.

**Walling, M. D., Catley, D., & Taylor, A.** (1991, June). *The interrelationships between goal perspectives, perceived competence, and indices of intrinsic motivation.* North American Society for the Psychology of Sport and Physical Activity, Asilomar, CA.

**Walling, M. D.** (1991, April). *Learned helplessness: A case study of a sixth-grade physical education student.* American Alliance for Health, Physical Education, Recreation and Dance, San Francisco, CA.

### Webinar

Fry, M. D., & Hogue, C. M. (2019). *Theories and Models in Sport Psychology: A Review.* Association for the Advancement of Applied Sport Psychology.

### State/Regional Presentations

Gray, R., & Fry, M. D. (2020). *Employing a buddy system to foster physical activity among college students with a physical disability.* Midwest Sport Psychology Symposium, Illinois State University.

Wineinger, T., & Fry, M. D. (2020). A collaboration between a sport psychology lab with a youth sport organization: Helping WIN create an optimal sport experience. Midwest Sport Psychology Symposium, Illinois State University.

**Fry, M. D.** (2018). *Three ideas for incorporating sport psychology into practice and competition.* Greenbush Coaches' Workshop.

**Fry, M. D.** (2018). *Three more ideas for incorporating sport psychology into practice and competition.* Greenbush Coaches' Workshop.

**Fry, M. D.** (2017). *Sport Psychology: Setting a Positive Tone for the Team* (Sessions A & B, repeated). Greenbush Fall Coaches' Workshop.

**Fry, M. D.** (2016). *KU Graduate Programs in Health, Sport & Exercise Science.* Morehouse College Graduate Program Fair (February, 2016).

**Fry, M. D.** (2016, Fall). *Keys to Helping Athletes Develop Strong Mental Skills: The Role of Sport Psychology.* Keynote for Greenbush Coaching Conference, Eudora, KS.

**Fry, M. D.** (2016, Spring). *Working with and bringing out the best in difficult athletes.* Greenbush Coaching Conference, Eudora, KS.

**Fry, M. D.** (2015). *Bringing out the Best in Every Swimmer: The Contribution of Sport Psychology.* Keynote delivered to US Master Swim at their National Conference; Kansas City, KS.

**Fry, M. D.** (2015). *Caring Climates for Physical Activity Settings.* University of Milwaukee, Wisconsin.

**Fry, M. D.** (2015). *Creating a Caring Climate to Maximize Athletes' Potential On and Off the Field.* Keynote presented at the Positive Coaching Alliance Trainers' Institute.

**Fry, M. D.** (2015). *Maximizing Athletes' Potential On and Off the Field.* Keynote delivered to X's and O's Coaching Education Workshop, Emporia State University, Emporia, KS.

**Fry, M. D.** (2015). *Setting the Stage for Coaches to Optimize Athletes' Motivation.* Big XII invited lecture at Texas Christian University; Fort Worth, TX.



- Fry, M. D.,** Moore, E., W., G., Iwasaki, S., Fontana, M., Hogue, C., Claunch, J., & McGhee, R. (2012). *Building Mentally Strong Athletes: Ideas for Incorporating Mental Skills Training with Sport Teams*. Kansas Alliance for Health, Physical Education, Recreation, & Dance in Lawrence, KS.
- Fry, M. D.** (2012). *Strong Girls: Hearing About the Benefits of a Physical Activity/Positive Life Skills Program from the Leaders and Kids*. Kansas Alliance for Health, Physical Education, Recreation, & Dance in Lawrence, KS.
- Moore, E. W., & **Fry, M. D.** (2010). *Kids don't care what you know until they know that you care: Tips for building caring environments*. Kansas Alliance for Health, Physical Education, Recreation & Dance, Wichita, KS.
- Brown, T., **Fry, M. D.,** & Hogue, C. (2010). *Positive life skills for every walk of life*. Kansas Alliance for Health, Physical Education, Recreation & Dance, Wichita, KS.
- Fry, M. D.,** Brown, T., Moore, E. W., Hogue, C., Sauer, S., & Beyer, J. (2010). *Team time: Team building activities for any group to use and process*. Kansas Alliance for Health, Physical Education, Recreation & Dance, Wichita, KS.
- Williamson, K., & **Fry, M. D.** (2009). *Bringing out the best in your athletes: Making sport fun again while enhancing your team's competitive edge*. Kansas Alliance for Health, Physical Education, Recreation & Dance, Pittsburg, KS.
- Moore, W. E., & **Fry, M. D.** (2009). *Are we building character or characters?: Strategies for promoting integrity among young athletes*. Kansas Alliance for Health, Physical Education, Recreation & Dance held in Pittsburg, KS.
- Brown, T. C., & **Fry, M. D.** (2009). *Ideas to implement in a youth physical activity life skills program*. Kansas Alliance for Health, Physical Education, Recreation and Dance held in Pittsburg, KS.
- Fry, M. D.,** Dodd, R., Brown, T. C. (2008). *Getting them interested and coming back: Creating a positive and caring environment in exercise settings*. Kansas Association of Health, Physical Education, Recreation and Dance, Emporia, KS.
- Fry, M. D.** (2005). *Creating a Positive Climate and Optimizing Motivation in Physical Education & on Sport Teams*. An invited presentation for the Lutheran Schools Midsouthern Regional Conference held in Memphis, TN.

**SUPPORT**

<b>EXTERNAL FUNDING</b>	<b>AGENCY/SOURCE</b>	<b>AMOUNT</b>	<b>PERIOD</b>
Creating Optimal Climate for Youth With Congenital Heart Disease	American Council on Exercise	\$2400	2021-2022
Climate Free Throw Intervention	Association for Applied Sport Psychology	\$4980	2021-2022
Strong Girls	Association for Applied Sport Psychology	\$4625	2019-2020
Rock Chalk, Zuni	Running Strong for American Indian Youth	\$5000	2017-2018
KU PCA Initiative	Positive Coaching Alliance/	\$75,000	2017-2020

David and Margaret Shirk Physical Education Programs Fund			
Strong Girls: A positive life skills intervention for 3 <sup>rd</sup> -5 <sup>th</sup> girls	Kohl's Cares for Kids	\$4000	2011
Students' salivary stress responses when juggling in two distinct motivational climates	Association of Applied Sport Psychology	\$2800	2010-11
Effects of resistance exercise and a Pre-workout dietary supplement on Physiological adaptations	Labrada	\$5000	2010
Strong Girls: A positive life skills physical activity intervention for elementary school girls	Association of Applied Sport Psychology	\$3220	2009-10
Fostering & maintaining motivation among urban youth tennis players	United States Tennis Association	\$10,000	1997-98

<b>EXTERNAL PROPOSALS NOT FUNDED</b>	<b>AGENCY/SOURCE</b>	<b>AMOUNT</b>	<b>PERIOD</b>
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Children's International Guatemala & US Collaboration	ASportsUnited: International Sports Programming Initiative	\$224,953	2012
Dare to Care: Tackling Childhood Obesity	Albert Foundation	\$46,000	2013
Strong Girls: A positive life skills/physical activity program	Live-Well Lawrence-Kansas Health Foundation	\$5000	2011
Strong Girls: A positive life skills/physical activity program for girls	Payless Foundation	\$15,000	2011
Strong Girls: A positive life skills/Physical activity program for children	Sprint Foundation	\$168,000	2011

**SUPPORT**

<b>INTERNAL FUNDING</b>	<b>AGENCY/SOURCE</b>	<b>AMOUNT</b>	<b>PERIOD</b>
Research Excellence Initiative" A Collaboration to Train Biology Lab Instructors to Create a Caring & Task Involving Climate	University of Kansas; College of Liberal Arts & Sciences	\$30,000	2019-2020 (under review)

Strong Girls: A community life skills/physical activity research and service project for elementary girls in Lawrence.	University of Kansas KU SOE Academic Year Research Support	\$8000	2011
Examining the motivational climate in a national fitness company.	University of Kansas Faculty Research Grant	\$5000	2010
Strong Girls: A physical activity and life skills intervention for faculty adolescent girls.	University of Kansas Research Grant	\$6000	2009
A team building/mental skills intervention for children enrolled in a summer camp.	University of Kansas New Faculty Research Grant	\$8000	2008
The relationship between young athletes' perceptions of a caring climate on their sport teams to their motivational responses	University of Memphis Faculty Research Grant	\$6000	2005
Effect of a strength training intervention for underserved elementary students	University of Memphis Faculty Research Grant	\$4000	2000-02
An examination of black females' perceptions of physical activity	Center for Research on Educational Policy, University of Memphis	\$5000	2000
Children's perceptions of ability and their motivational responses in physical education class.	Center for Research on Educational Policy, University of Memphis	\$3800	1999
The motivational implications of students' understanding of effort and ability in the physical domain.	University of Memphis Faculty Research Grant	\$4000	1995
Children's understanding of luck and ability, and task difficulty.	University of Memphis Faculty Research Grant	\$3000	1994
Developmental differences in children's conceptions of ability, effort, and task difficulty in the physical domain.	Purdue Foundation Grant	\$9,900 (per year for 2 years)	1992-94

**Memberships in Professional Organizations**

American Psychological Association (2017-present)

American Alliance for Health, Physical Education, Recreation, and Dance (1988-2017).

Association for Applied Sport Psychology, Member (1991-present).

Kansas Alliance for Health, Physical Education, Recreation, & Dance (2008-present).

North American Society for the Psychology of Sport and Physical Activity, Member (1988-2000).

Indiana Association for Health, Physical Education, Recreation, and Dance, Member (1993-1994).

Tennessee Association for Health, Physical Education, Recreation, and Dance, Member (1994-2000).

**Teaching Responsibilities:****Undergraduate**

EXSS 3307 Psychosocial Aspects of Sport [UMemphis]

EXSS 3450 Psychological Aspects of Exercise [UMemphis]\*

EXSS 4605 Internship in Exercise & Sport Science [UMemphis]

EXSS 4999 Senior Project in Health, Physical Education, & Recreation [UMemphis]\*

HSES 385 Psychological Aspects of Exercise [KansasU]\*

HSES 440 Applied Sport Psychology [KansasU]\*

**Graduate**

EXSS 7173 Sport and Exercise Psychology [UMemphis]\*

EXSS 6903 Developmental Perspectives in Youth Sport [UMemphis]\*

EXSS 7133 Current Readings: Motivation in Physical Activity Settings [UMemphis]\*

EXSS 7907 Special Topics: Applied Sport Psychology [UMemphis]\*

HSES 798 Special Course: Creating a Positive Environment in Physical Activity Settings [KansasU]\*

HSES 798 Special Course: Sport Psychology Within Youth Sport [KansasU]\*

HSES 798 Special Course: Advanced Sport Psychology [KansasU]\*\*

HSES 804 Sport Psychology [KansasU]\*\*

HSES 806 Stress Management [KansasU]\*

HSES 823 Behavior Modification [KansasU]

HSES 892 Psychological Foundations of Sport and Physical Activity [KansasU] \*

HSES 982 Research Ethics [KansasU]

\*Courses I developed.

**Community Presentations**

**Fry, M. D.** (November, 2017). *Lead campus participation in celebration of World Kindness Day.*

**Fry, M. D.** (June, 2016). *Mental Skills: A Key Ingredient for Excellence in Cross Country.* Workshop for Eudora High School Cross Country Team; Eudora, KS.

**Fry, M. D.** (2016). *Creating a Caring and Task-Involving Climate in CI's Game On Program.* A presentation for CI Employees at the International Headquarters Office in Kansas City, KS.

**Fry, M. D.** (2016). *Team Building: The Potential for Children International.*

Workshop for Children International Employees at the National Headquarters office in

Kansas City, KS.

- Fry, M. D.** (2015). *Activities and Strategies to Help Children and Adolescents Thrive in Physical Activity Settings*. Topeka Parks and Recreation Conference; Topeka, KS.
- Fry, M. D.** (2015). *Fostering Wellness at the Worksites*. Live Well Lawrence; Lawrence, KS.
- Fry, M. D.** (2011, Nov.). Guest panelist for KU Alternative Breaks, University of KS
- Fry, M. D.** (2011, Nov.). Guest speaker for Multicultural Education, University of KS.
- Fry, M. D.** (2011, Nov.). Guest speaker for Coaching Football Class, University of KS.
- Fry, M. D.** (2011, Oct.). Guest speaker for KU Bowling Team, University of KS.
- Fry, M. D.** (2011, April). Guest speaker for Positive Psychology Class, University of KS.
- Fry, M. D.** (2011, March). Guest speaker for Coaching Softball Class, University of KS.
- Fry, M.D.** (2011, Feb.). Guest speaker for Coaches Meeting for Sunflower Soccer Association, Topeka, KS.
- Fry, M. D.** (2010). Guest speaker for Healthy Musicians Class (2-hour workshop), University of KS.
- Fry, M. D.** (2009). Guest speaker for Life Skills Class at Atchison Community High School, KS.
- Fry, M. D.** (2005, Feb.). Caring communities within physical activity settings. An invited presentation to a Memphis Chapter of the Philanthropic Educational Organization.
- Fry, M. D.** (2001-present). Coordinate mental skills and physical activities for youngsters (i.e., cancer patients & their siblings) at Target House in Memphis, TN. Have conducted approximately 12 1.5-2 hour sessions.
- Fry, M. D.** (2002, July 17th). The role of sport psychology in the prevention of and rehabilitation after injury. A presentation for coaches attending the Memphis Interscholastic Athletic Association Conference.
- Fry, M. D.** (May, 2002). Presented stress management session for Cancer Support Group at Pentecostal Church in Memphis, TN.
- Fry, M. D.** (2001-present). Coordinate mental skills and physical activities for youngsters (i.e., cancer patients & their siblings).
- Fry, M. D.** (2000 & 2001, March-April). Coordinator for Short Putts to Spring Workshops for the MidSouth Junior Golf Association. Presenter for 2 of the 5 workshops on team building skills.
- Fry, M. D.** (1996). Optimizing arousal levels in tennis. A presentation to the Women's tennis team at The University of Memphis.
- Fry, M. D.** (1995, October). *Mental skills training in track and field*. A presentation to the Women's track and cross country teams at The University of Memphis.
- Walling, M. D.** (1995, February). *Maximizing your children's motivation in swimming: An educational sport psychology perspective*. A presentation to the Booster Club parents of the University of Memphis Swim Club.
- Walling, M. D.** (1995, February). *Fostering effort and enjoyment with your tennis players: A sport psychology perspective*. An invited talk which was part of a workshop sponsored by the USTA, the National Umpires Association and the Memphis City Schools for high school tennis coaches.
- Walling, M. D.** (1994). *Sport psychology with a developmental twist*. An invited presentation to the Sport Psychology Colloquium, Department of Psychology, University of Memphis.
- Walling, M. D.** (1993, October). *The influence of parents on young gymnasts' levels of stress and motivation*. An invited presentation sponsored by the United States Gymnastics Federation, Indianapolis, IN.



**Walling, M. D.**(1992, October). *The mechanics of sport psychology: What we do and how it impacts you and your family*. Presentation to the Purdue Mechanical Engineering Advisory Board Spouses.

**Walling, M. D.** (1991, July). *Stress Management*. Invited presentation sponsored by the National Institute for Fitness and Sport.

**Walling, M. D., & Newton, M.** (1991, October). *Sport Psychology for the Weekend Athlete*. Invited presentation sponsored by the Eli Lilly Corporation, Indianapolis, IN.

### **Departmental/University Service**

KU Faculty Research Grant Review Committee (2021-2023)

Wolfe Teaching Award, School of Education (2021)

KU Title IX Committee (2020)

Kansas Women's Leadership Institute, Net-Walk Mentor Participant (2016-2017).

KU Certificate in Sport Committee (2017-2018).

KU Center for Undergraduate Research, Advisory Board (2016-2018).

KU Calendar Committee (2016-2018; Chair, 2017-2019).

SOE Scholarship & Awards Committee (2013-2019).

SOE Convocation Volunteer (2009-present).

HSES Faculty Search Committees (2009, 2010, 2012, 2013, 2014, 2015).

HSES Scholarship & Awards Committee (2010-2013), University of Kansas.

HSES Personnel Committee (2011-present), University of Kansas.

HSES Graduate Curriculum Committee (2008-2014), University of Kansas.

SOE Diversity Committee (2013-2016), University of Kansas.

SOE Technology Committee (2011-2013), University of Kansas.

SOE Governance Committee (2011-2013), University of Kansas.

SOE Personnel Committee (2007-2010), University of Kansas.

University of Kansas, Dean of the School of Education 5-year Review Committee (2014).

President's Tenure & Promotions Appeal Committee. (2007-2009). The University of Memphis.

HSS Community Affairs Committee (2004-2006). The University of Memphis.

Coordinator of Achievement Motivation Seminar (2003). The University of Memphis, Dept. HMSE.

PETE Unit Head, Dept. of HMSE, University of Memphis (2001-2003).

HMSE Tenure and Promotion Committee (1999-2000; Chair 2000-2001), The University of Memphis.

HMSE Coordinator for the Science Olympiad sponsored by The University of Memphis for high school honor science students in the Western portion of TN (1995-1999).

Dean's Council for Teacher Education (1994-1995), University of Memphis.

HMSE Material Resources Committee (1994-1995; 1998-2000, 2002; 2000-2001, Chair), University of Memphis.

HMSE Ad Hoc Committee on Internships (1994-1995), University of Memphis.

HMSE Recruitment Committee (1995-1996).

HMSE Physical Education Teacher Education Unit (1994-present; Unit Head-2001-2002), University of Memphis.

HMSE Ad Hoc Committee on Proposing a PhD Program (1995-1997).

HMSE Undergraduate Council (1994-95 & 1997-1998)

HMSE Academic Council (1996-1998).

HMSE Graduate Studies and Research Council (1995-2001; chair from 1996-1998)

College of Education Graduate Council (1996-1998).

Graduate Coordinator for the Department of Human Movement Sciences and Education, (1996-1998).

### **Service to National Organizations**

Creating a Caring Climate Within and Across an Athletic Program, Positive Coaching Alliance Workshop (2020).

Subject Matter Expert for the Certification Exam Committee, Association of Applied Sport Psychology (2018).

Member of Ad-Hoc Committee to Study Future of AASP, Association of Applied Sport Psychology (2012-2015).

Member of the Social Psychology Section Committee, Association for the Advancement of Applied Sport Psychology (AAASP). Appointed for a 3-year-term, 1996-99; 2001-2003.

Member of AAASP Dissertation Award Committee (1998 & 2002).

Member of Editorial Board for *Physical Activity Today* (American Alliance for Health, Physical Education, Recreation and Dance publication), 1997-2001.

Member of Sport Psychology Program Area Review Committee for the 1996 Annual Meeting of the North American Society for the Psychology of Sport and Physical Activity (NASPSPA).

Executive Board Member, Association for the Advancement of Applied Sport Psychology, (2004-2006).

Member of Program Review Committee, American Alliance of Health, Physical Education, Recreation & Dance (2009- 2017); Chaired committee in 2010.

Member of Program Review Committee, Association for Applied Sport Psychology (2008-present).

### **Reviewing/Editing Responsibilities**

Associate Editor (2009-2012); Editorial Board Member (2000-2009; 2013-present) and Reviewer (1992-1999). *Journal of Applied Sport Psychology*.

Associate Editor. *Sport Psychology in Action* (2008-present).

Editorial Board Member. *Sport, Exercise, and Performance Psychology* (2011-present; American Psychological Association Journal).

Sport & Exercise Psychology Section Editor (2003-2006) and Reviewer (1994-present). *Research Quarterly for Exercise and Sport*.

Co-editor with David R. Black of Abstracts Column. *Peer Facilitator Quarterly* (1993-1994).

Reviewer. *Education and Treatment of Children* (1993-1995).

Reviewer. *Journal of Health Education* (1993-1995).

Reviewer. *The Sports Psychologist* (1997-present).

Reviewer. *International Journal of Sport Psychology*. (1997-present).

Reviewer. *Journal of Sport and Exercise Psychology* (1993-present).

Reviewer. *Journal of Strength and Conditioning* (1998-present).

Reviewer & Editorial Board Member. *Journal of Strength and Conditioning Research* (Reviewer, 1996-present; Editorial Board Member, 1996-1998).

### **Contributor to Community/National Forum**

- Fry, M. D., & Brown, T. C.** (2021-present). Co-Directors of Strong Girls, an after-school physical activity and lifeskill program for adolescent girls. University of Kansas.
- Fry, M. D.** (Fall, 2017). *Participating in a Positive Sport Climate Reaps Many Benefits for Young People*. Column written for the National Dropout Prevention Coalition-Newsletter.
- Fry, M. D.** (2017). *The Power of the Positive*. Contributor to the Positive Coaching Alliance Video.
- DeAngelis, T. (2016) *Psychologists' research points ways to keep youth athletes in sports*. American Psychological Association Monitor Newsletter [KU Sport & Exercise Psychology Lab featured]
- Fry, M.D.** (2003). *Coaches' rant can bench kids for life*. Invited guest column in the Viewpoint Section of the Commercial Appeal, April 7, 2003.
- Fry, M.D.** (2003, March). *Strategies for creating a task-involving climate with underserved youth*. An invited presentation to the Dept. of EXSS at the University of Mississippi.
- Fry, M.D.** (2002). Presenter of workshop entitled: *The Climate Counts: Techniques and Strategies for Fostering a Task-Involving Motivational Climate*.
- Fry, M. D., & Newton, M. L.** (1997, December). *TARGETing success in volleyball: Creating a positive motivational climate*. Invited speaker at the American Volleyball Coaches Association (AVCA) National Convention preceding the NCAA Final Four Tournament in Spokane, WA.
- Fry, M. D.** (1996, April). Invited speaker at Colonial Junior High's Career Day.
- Fry, M. D.** (February, 1995 & October, 1996). Invited guest on Eddie Cantler's talk-show, "The Trainer's Corner" seen on the Library Channel, Memphis, TN.
- Walling, M. D.** (1995). Choosing quality youth sport programs for children: The critical role of parents. *Journal of Kinetic Arts*, 1 (5).

### **Applied Sport Psychology Experiences**

- Fry, M. D. (2008-present). Mental Skills Interventions with high school & university athletes.
- Fry, M. D. (2013-2018). Mental Skills Intervention with a high school baseball team.
- Fry, M. D. (2009-2011). Mental Skills Intervention with a youth baseball team.
- Fry, M. D. (2008-2010). Mental Skills Intervention with a Division 1 collegiate volleyball team.
- Fry, M.D. (2006-2007). Mental Skills Intervention with a high school basketball team.
- Fry, M. D. (2006). Mental Skills Intervention with a Division 1 cross country team.
- Fry, M.D. (2005-2006). Mental Skills activities with a high school golfer.
- Fry, M.D. (2003). Mental Skills Activities provided to the Dolphins, a youth synchronized swim program in Memphis.
- Fry, M.D. (2001-2007). Mental Skills Games and Activities Sessions provided to residents of Target House (i.e., long-term treatment patients at St. Jude Hospital).
- Fry, M. D. (2001, Spring). The Strength Club. An after-school mental skills training program for elementary-aged children.
- Fry, M. D. (1996, Spring). Consultation with members of a Division 1 collegiate Track and Field Team.



Walling, M. D. (1994, December). Member of Sport Psychology Coaching Staff for the Talent Opportunity Program (TOP) Camp sponsored by the United States Gymnastics Federation (USGF). Tulsa, OK

Walling, M. D. (1992, October). *Effective Goal Setting in Volleyball*. Presentation to the West Lafayette High School Volleyball Team.

Walling, M. D. (1992, April). *Stress Management in Sport*. Presentation to the Women's Crew Team, Purdue University.

Walling, M. D. (1992). Consultation with High School Tennis Player Over a Season.

**Chair**, Graduate Student Advisory Council, Department of Health, Kinesiology, and Leisure Studies at Purdue University, 1991-1992.

**WEST VIRGINIA LEGISLATURE****2021 REGULAR SESSION****Exhibit 3****ENROLLED****Committee Substitute****for****House Bill 3293**

BY DELEGATES HANNA, BRIDGES, CLARK, ELLINGTON,

HORST, JENNINGS, LONGANACRE, MAZZOCCHI, TULLY,

PHILLIPS AND BURKHAMMER

[Passed April 9, 2021; in effect ninety days from  
passage.]

**EXHIBIT**

tabbles

WV-34

Case 2:21-cv-00316 Document 305-5 Filed 05/12/22 Page 321 of 382 PageID #: 19403  
Enr CS for HB 3293

1 AN ACT to amend the Code of West Virginia, 1931, as amended, by adding thereto a new section,  
2 designated §18-2-25d, relating to designation of athletic teams or sports sponsored by  
3 any public secondary school or state institution of higher education according to biological  
4 sex; providing legislative findings; defining “biological sex”, “female”, and “male”; providing  
5 for designation of athletic teams as “males, men, or boys”, “females, women, or girls”, or  
6 “coed or mixed”; prohibiting biological males from participating on athletic teams or sports  
7 designated for biological females where competitive skill or contact is involved; clarifying  
8 that eligibility of any student to participate on athletic teams or sports designated for  
9 biological males is not restricted; providing cause of action for student aggrieved by  
10 violation of this section; requiring identity of minor student related to such action to remain  
11 anonymous; requiring promulgation of rules by the State Board of Education; and requiring  
12 proposal of legislative rules by the Higher Education Policy Commission and Council for  
13 Community and Technical College Education.

*Be it enacted by the Legislature of West Virginia:*

## **ARTICLE 2. STATE BOARD OF EDUCATION.**

### **§18-2-25d. Clarifying participation for sports events to be based on biological sex of the athlete at birth.**

1 (a) The Legislature hereby finds:

2 (1) There are inherent differences between biological males and biological females, and  
3 that these differences are cause for celebration, as determined by the Supreme Court of the  
4 United States in *United States v. Virginia* (1996);

5 (2) These inherent differences are not a valid justification for sex-based classifications that  
6 make overbroad generalizations or perpetuate the legal, social, and economic inferiority of either  
7 sex. Rather, these inherent differences are a valid justification for sex-based classifications when  
8 they realistically reflect the fact that the sexes are not similarly situated in certain circumstances,  
9 as recognized by the Supreme Court of the United States in *Michael M. v. Sonoma County*,

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Enr CS for HB 3293

*Superior Court* (1981) and the Supreme Court of Appeals of West Virginia in *Israel v. Secondary Schools Act. Com'n* (1989);

(3) In the context of sports involving competitive skill or contact, biological males and biological females are not in fact similarly situated. Biological males would displace females to a substantial extent if permitted to compete on teams designated for biological females, as recognized in *Clark v. Ariz. Interscholastic Ass'n* (9th Cir. 1982);

(4) Although necessarily related, as concluded by the United States Supreme Court in *Bostock v. Clayton County* (2020), gender identity is separate and distinct from biological sex to the extent that an individual's biological sex is not determinative or indicative of the individual's gender identity. Classifications based on gender identity serve no legitimate relationship to the State of West Virginia's interest in promoting equal athletic opportunities for the female sex; and

(5) Classification of teams according to biological sex is necessary to promote equal athletic opportunities for the female sex.

(b) Definitions. - As used in this section, the following words have the meanings ascribed to them unless the context clearly implies a different meaning:

(1) "Biological sex" means an individual's physical form as a male or female based solely on the individual's reproductive biology and genetics at birth.

(2) "Female" means an individual whose biological sex determined at birth is female. As used in this section, "women" or "girls" refers to biological females.

(3) "Male" means an individual whose biological sex determined at birth is male. As used in this section, "men" or "boys" refers to biological males.

(c) Designation of Athletic Teams. —

(1) Interscholastic, intercollegiate, intramural, or club athletic teams or sports that are sponsored by any public secondary school or a state institution of higher education, including a state institution that is a member of the National Collegiate Athletic Association (NCAA), National

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Association of Intercollegiate Athletics (NAIA), or National Junior College Athletic Association (NJCAA), shall be expressly designated as one of the following based on biological sex:

(A) Males, men, or boys;

(B) Females, women, or girls; or

(C) Coed or mixed.

(2) Athletic teams or sports designated for females, women, or girls shall not be open to students of the male sex where selection for such teams is based upon competitive skill or the activity involved is a contact sport.

(3) Nothing in this section shall be construed to restrict the eligibility of any student to participate in any interscholastic, intercollegiate, or intramural athletic teams or sports designated as “males,” “men,” or “boys” or designated as “coed” or “mixed”: *Provided*, That selection for a team may still be based on those who try out and possess the requisite skill to make the team.

(d) Cause of Action. —

(1) Any student aggrieved by a violation of this section may bring an action against a county board of education or state institution of higher education alleged to be responsible for the alleged violation. The aggrieved student may seek injunctive relief and actual damages, as well as reasonable attorney’s fee and court costs, if the student substantially prevails.

(2) In any private action brought pursuant to this section, the identity of a minor student shall remain private and anonymous.

(e) The State Board of Education shall promulgate rules, including emergency rules, pursuant to §29A-3B-1 *et. seq.* of this code to implement the provisions of this section. The Higher Education Policy Commission and the Council for Community and Technical College Education shall promulgate emergency rules and propose rules for legislative approval pursuant to §29A-3A-1 *et. seq.* of this code to implement the provisions of this section.

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Case 2:21-cv-00316 Document 305-5 Filed 05/12/22 Page 325 of 382 PageID #: 19407  
Enr CS for HB 3293

The Joint Committee on Enrolled Bills hereby certifies that the foregoing bill is correctly enrolled.

.....  
*Chairman, House Committee*

.....  
*Chairman, Senate Committee*

Originating in the House.

In effect ninety days from passage.

.....  
*Clerk of the House of Delegates*

.....  
*Clerk of the Senate*

.....  
*Speaker of the House of Delegates*

.....  
*President of the Senate*

\_\_\_\_\_

The within ..... this the.....  
day of ....., 2021.

.....  
*Governor*

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# Cortisol and Stress Responses During a Game and Practice in Female Collegiate Soccer Players

Article in The Journal of Strength and Conditioning Research · May 2007  
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The Differential Effect of Motivational Climate on Adolescents' Psychophysiological Stress & Motivational Responses [View project](#)



Journal of Strength and Conditioning Research, 2007, 21(2), 583–588  
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# CORTISOL AND STRESS RESPONSES DURING A GAME AND PRACTICE IN FEMALE COLLEGIATE SOCCER PLAYERS

KANAE HANEISHI, ANDREW C. FRY, CHRISTOPHER A. MOORE, BRIAN K. SCHILLING, YUHUA LI, AND MARY D. FRY

*Human Performance Laboratories, The University of Memphis, Memphis, Tennessee 38152.*

**ABSTRACT.** Haneishi, K. A.C. Fry, C.A. Moore, B.K. Schilling, Y. Li, and M.D. Fry. Cortisol and stress responses during a game and practice in female collegiate soccer players. *J. Strength Cond. Res.* 21(2):583–588. 2007.—The purpose of this study was to compare the cortisol responses from a regular season game and a typical practice session in female National Collegiate Athletic Association Division I collegiate soccer players. Eighteen players were assigned to 2 groups, 10 starters and 8 nonstarters, depending on their playing time. Salivary cortisol concentration, as well as competitive sport anxiety (somatic and cognitive anxiety, self-confidence), was monitored before and after 1 regular season game and 1 typical practice session. Although salivary cortisol levels increased postgame for both starters (+250%) and nonstarters (+140%), they increased to a greater extent for the starters. Practice salivary cortisol did not significantly change ( $p > 0.05$ ). Cognitive and somatic anxiety was greater pre- and postgame when compared with the pre- and postpractice scores, respectively. These data clearly demonstrate the psychological and physiological differences between soccer competition and practice in collegiate women. It appears that both physiological and psychological variables combine to contribute to the large stress hormone response to an actual competitive game.

**KEY WORDS.** cognitive anxiety, somatic anxiety, self-confidence, stress, competition

## INTRODUCTION

Soccer is a worldwide sport becoming increasingly popular among women, especially at the high school and college levels in the U.S.A. (16). However, there is a paucity of research in the literature regarding the physiology of soccer. More specifically, research on the stress of soccer, including the study of the physiological demands of starters and nonstarters during both game and practice conditions, is rather limited (7). Further investigation of this particular population is needed for the effective dissemination of scientifically based training knowledge specific to the sport.

The glucocorticoid cortisol is often used as both an acute and chronic indicator of training stress (8). After training or intense exercise, there is an acute increase in circulating cortisol levels (10, 11, 20). Previous studies have also reported significant increases in cortisol concentrations during sport competition (11, 12, 26, 28), as well as before sport competition (27). Increased cortisol response prior to sport competition has been documented as an anticipatory response and appears to be higher in winners than in losers (12, 13). In terms of sex-specific responses, there seems to be no significant difference in cortisol concentration between men and women (23). Moreover, cortisol, compared with androgens, may be a

more appropriate hormonal parameter of stress in women because it is less influenced by the menstrual cycle (2).

Cortisol is often assessed utilizing blood serum assay techniques. However, salivary cortisol measurement is a relatively simple and easy procedure, which has been shown to be an effective indicator of the plasma-free cortisol concentration (21, 22, 29, 30, 34). Pearson-product moment correlations between salivary and serum cortisol have been reported in the range of  $r = 0.60$ – $0.97$  (17, 19, 31). In addition to ease of data collection and sample preparation, salivary cortisol measurement is relatively stress free due to the lack of venipuncture (6), thus reducing the potential for artificially high values due to an anticipatory effect.

To more effectively understand the stress that athletes experience in soccer, psychological as well as physiological factors associated with the game must be considered. Generally, the stress response associated with game play is much higher than during practice. Filaire and colleagues (12) support this statement, noting that true competition induces greater hormonal response compared with laboratory exercise. To more fully understand factors contributing to the stress hormone response, inventories of psychological stress may be utilized. The Sport Anxiety Scale (SAS) is a competitive sport trait anxiety scale with 2 cognitive trait anxiety scales, 1 for worry and 1 for concentration disruption, as well as a somatic anxiety scale (31). The Competitive Sport Anxiety Inventory-2 (CSAI-2) is a self-report competitive sport state anxiety inventory composed of somatic and cognitive state anxiety scales, plus a self-confidence scale (25). The CSAI-2 has previously been used with physiological parameters, such as hormone concentration and heart rate, to assess psycho-physiological stress (11, 26).

The primary purposes of this study were to (a) compare the psycho-physiological stress responses during a competitive game and a regular practice session, (b) determine differences in these responses between starting and nonstarting female collegiate soccer players, and (c) examine relationships between physiological and psychological stress indicators. Considering the cortisol and psychological stress response subsequent to training, it was hypothesized that (a) the physical and psychological stress during a game would be higher than during practice, (b) the stress responses would be greater in starters vs. nonstarters during a game but that they would be similar for a practice, and (c) salivary cortisol would be correlated with somatic and cognitive state anxiety in a positive linear relationship. The specific demands of starters and nonstarters during game play may result in

**TABLE 1.** Detailed description of the practice.

Time (h)	Activity
1509	Warm-up jogging twice across field
1510	Stretching (calves and quadriceps)
1514	Warm-up running drills (forward-backward, cutting, side step)
1517	Stretching (calf and groin)
1519	Warm-up drills (calf raises and jump exercises)
1522	Instructions from coach
1529	Cross and shoot from the right training game
1541	Cross and shoot from the left training game
1559	3-on-3 half field game
1615	Recovery
1620	6-on-6 game
1635	End-of-game drill
1639	Cross ball shoot drill
1648	Shooting drill with postplay
1654	End of practice

a unique stress response due to the discrepancies in playing time between the 2 groups.

## METHODS

### Experimental Approach to the Problem

The present study utilized a collegiate women's soccer team competing in an National Collegiate Athletic Association (NCAA) Division I soccer league in the U.S.A. All players were monitored during 1 game and at 1 typical practice. Measures of psycho-physiological stress were assessed on 4 occasions, before and after 1 regular practice, and before and after 1 regular season game just prior to the conference tournament. This game was considered to be of high importance because the outcome could have directly affected the team's postseason standing. The practice session, which involved typical intensity, included warm-up, ball drills, and scrimmage for about 2 hours (1500–1700). The average temperature of the practice day was 25°C, with 35% relative humidity. See Table 1 for a detailed description of the practice. The regular season game was held at 1900–2100. The team was defeated by 1 point, which was scored in the 70th minute of the game (0–1). The average game day temperature was 21°C, with 30% relative humidity.

All individuals participated in a familiarization session for salivary sample collection 3 days before the first data collection. The independent variables in the 3-way repeated analysis of variance (ANOVA) were condition (game and practice), time (pre and post), and subjects (starters and nonstarters). The dependent variables were cortisol concentration, state somatic and cognitive anxiety, and state self-confidence values. Values of competitive trait anxiety are presented for descriptive purposes only.

### Subjects

Twenty women from an NCAA Division 1 soccer team (age = 18–24 years) participated as subjects in this study.

All subjects were free of orthopedic injury and disease and gave both written and oral consent to participate in the study as required by the institutional review board. All subjects also completed a medical/health history and a menstrual history questionnaire. The subjects were assigned to 2 groups, 10 starters and 8 nonstarters, based on their playing time in the game (starters = 86.4%; nonstarters = 8.3% mean total game time). Descriptive statistics of the subjects can be found in Table 2. The ANOVA examining athletes responses to the trait SAS revealed no significant differences in playing status for somatic anxiety ( $X \pm SD$ ; starters =  $15.0 \pm 4.2$ ; nonstarters =  $16.7 \pm 7.3$ ), worry (starters =  $22.1 \pm 4.3$ ; nonstarters =  $20.7 \pm 8.9$ ), or concentration disruption (starters =  $17.1 \pm 3.6$ ; nonstarters =  $14.2 \pm 5.2$ ).

### Cortisol Analyses

Salivary samples were obtained at 4 occasions from each subject: 30 minutes before the competitive game (pre-game), 10 minutes after the competitive game (postgame), immediately before the regular practice (prepractice), and immediately after the regular practice (postpractice). Salivary samples were collected and stored in small plastic containers. When appropriate, subjects chewed paraffin to facilitate salivary flow. All salivary samples were frozen at  $-80^{\circ}\text{C}$  until assayed. All specimens and reagents were thawed only once and were allowed to reach room temperature ( $\sim 25^{\circ}\text{C}$ ) before analysis. Salivary concentrations of cortisol were determined from 25- $\mu\text{l}$  saliva samples using the DSL-10-671000 ACTIVE cortisol enzyme immunoassay (Diagnostic Systems Laboratories, Webster, TN). The intra-assay variance was 5.6%, and the sensitivity of the assay was  $0.3036\text{ nmol}\cdot\text{L}^{-1}$ .

### Psychological Analyses

The SAS was administered during body composition assessment. The SAS is a 21-item measure that has 3 scales: a somatic trait anxiety scale (9 items) and 2 cognitive trait anxiety scales (1 for worry [7 items] and 1 for concentration disruption [5 items]) (31). Athletes respond using a 4-point scale ranging from 1 (not at all) to 4 (very much so). Smith, Smoll, and Schutz (31) have reported evidence for the validity and reliability of the measure. The CSAI-2 was completed each time salivary samples were collected. The CSAI-2 is a self-reported psychometric inventory of anxiety states consisting of 27 items and is composed of somatic and cognitive state anxiety subscales plus a self-confidence scale. Each scale has 9 items, and athletes respond to the items using a 4-point scale ranging from 1 (not at all) to 4 (very much so). Scores on items within each scale were summed to arrive at mean scale scores. Higher scores on cognitive and somatic anxiety subscales indicate higher levels of anxiety, whereas higher score on the self-confidence scale indicates higher levels of self-confidence (25).

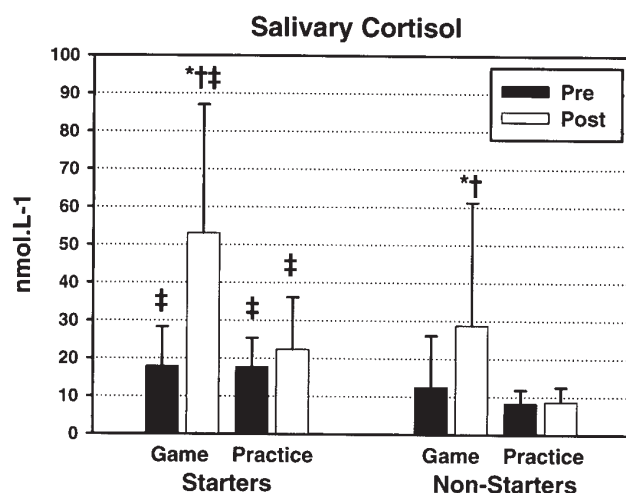
### Body Composition

For physical characteristics of the subjects, body composition (body mass index, lean body mass, fat mass, and

**TABLE 2.** Descriptive characteristics of the subjects ( $X \pm SD$ ).\*

Group	n	Age (y)	Height (m)	Weight (kg)	% fat	BMI ( $\text{kg}\cdot\text{m}^{-2}$ )	LBM (kg)	Fat mass (kg)
Starters	10	$20.2 \pm 2.0$	$1.66 \pm 7.70$	$58.3 \pm 7.3$	$16.6 \pm 4.8$	$21.1 \pm 1.5$	$48.5 \pm 6.2$	$9.7 \pm 3.3$
Nonstarters	8	$20.5 \pm 1.7$	$1.66 \pm 4.60$	$64.6 \pm 5.8$	$19.1 \pm 2.5$	$23.4 \pm 1.0$	$51.5 \pm 5.2$	$13.1 \pm 1.9$

\* BMI = body mass index; LBM = lean body mass.



**FIGURE 1.** Salivary cortisol concentrations ( $X \pm SD$ ; nmol.L<sup>-1</sup>) in response to a competitive game and a typical practice for both starters ( $n = 10$ ) and nonstarters ( $n = 8$ ) on a female collegiate soccer team. \* Different from pregame, † Different from postpractice, ‡ Different from nonstarters ( $p \leq 0.05$ ).

percent of body fat), heights, and weights were measured. Body composition was measured via a 3-skinfold (triceps, suprailiac, and thigh) method taken using a skin caliper and consistently recorded on the right side of the subject's body. Body density was calculated by a generalized skinfold equation formula (14). Percent of body fat was converted from the body density by the equation of Brozek and colleagues (5). The same experienced technician performed all measurements throughout the study. The physical characteristics may be found in Table 2.

#### Statistical Analyses

All data are expressed as  $X \pm SD$ . Three-way repeated measures ANOVA (condition [game vs. practice]  $\times$  status [starter vs. nonstarter]  $\times$  time [pre vs. post]) with Tukey posthoc procedures were used to determine the mean differences of cortisol concentration, somatic state anxiety, cognitive state anxiety, and state self-confidence. The effect size was calculated by mean differences divided by square root mean square error after the ANOVA. A correlation coefficient (Pearson's  $r$ ) was used to determine the relationship between cortisol concentration and CSAI-2 measurements. In all cases, the level of significance was  $p \leq 0.05$ .

## RESULTS

### Cortisol

A significant interaction was observed for cortisol responses ( $p < 0.05$ ; effect size [ES] = 1.54), indicating that

starters and nonstarters both exhibited increases postgame (nmol.L<sup>-1</sup>; starters, pregame =  $18.0 \pm 10.3$ , postgame =  $53.1 \pm 33.9$ ; nonstarters, pregame =  $12.5 \pm 13.6$ , postgame =  $28.8 \pm 32.5$ ; see Figure 1). The postgame cortisol values of starters and nonstarters together was also greater after the game vs. practice (ES = 1.52; starters, prepractice =  $8.3 \pm 3.5$ ; postpractice =  $22.4 \pm 13.8$ ; nonstarters, prepractice =  $17.7 \pm 7.7$ , postpractice =  $8.7 \pm 3.8$ ; see Figure 1). A main effect difference also indicated that starters had greater cortisol concentrations than nonstarters ( $p < 0.05$ ).

### Competitive Sports Anxiety

Table 3 lists the results for somatic and cognitive anxiety and self-confidence. Somatic state anxiety ( $p < 0.05$ ; ES = 1.04) and cognitive state anxiety ( $p < 0.05$ ; ES = 0.53) was greater for the pre- and postgame measures compared with practice for all subjects. A significant 3-way interaction (condition  $\times$  status  $\times$  time) was present for self-confidence ( $p < 0.05$ ). Tukey posthoc tests indicated that for self-confidence values, starters were greater than nonstarters (ES = 1.37); at prepractice, starters were less than nonstarters (ES = 0.87); at postpractice, starters were less than nonstarters (ES = 1.25); nonstarters at pregame were greater than nonstarters at postgame (ES = 1.92); and nonstarters at postgame were less than nonstarters at postpractice (ES = 2.81).

### Relationships Between Sports Anxiety and Cortisol Concentration

Only 1 significant relationship emerged between the CSAI-2 scales with cortisol concentration. Salivary cortisol was positively and significantly related to cognitive anxiety at prepractice ( $r = 0.70$ ) for starters only.

## DISCUSSION

One of the key findings of this study is the acute salivary cortisol response of female collegiate soccer athletes both during an actual competitive game and after typical practice. Briefly, when compared with the nonstarters, starters exhibited greater cortisol concentrations than those classified as nonstarters at all sample times. Additionally, the postgame cortisol response for all players was greater than postpractice values. This indicates that both the independent variables of condition (game vs. practice) and status (starter vs. nonstarter) influence the acute cortisol responses for these athletes. It has been long established that cortisol is increased in an intensity-dependent manner in response to an exercise stimulus (10). Of particular interest is the greater cortisol response of approximately 250% to a game compared with practice. This is in agreement with McKay and colleagues (26) who reported similar effects of competition compared with practice rounds in salivary cortisol responses in elite golfers. Filatre and

**TABLE 3.** Somatic anxiety, cognitive anxiety and self-confidence results ( $X \pm SD$ ;  $p < 0.05$ ).

Group	Condition	Somatic		Cognitive		Self-confidence	
		Pre	Post	Pre	Post	Pre	Post
Starters	Game	18.2 $\pm$ 5.0*	18.6 $\pm$ 6.1*	19.9 $\pm$ 4.1*	21.9 $\pm$ 4.2*	23.0 $\pm$ 2.5	22.1 $\pm$ 5.4†
	Practice	15.3 $\pm$ 4.7	16.6 $\pm$ 3.5	19.7 $\pm$ 4.5	18.2 $\pm$ 4.0	22.8 $\pm$ 5.3	22.7 $\pm$ 5.0
Nonstarters	Game	18.6 $\pm$ 5.3*	19.7 $\pm$ 5.3*	20.7 $\pm$ 7.9*	21.2 $\pm$ 6.4*	23.9 $\pm$ 4.4†	17.8 $\pm$ 3.8
	Practice	13.2 $\pm$ 4.5	13.8 $\pm$ 5.3	17.3 $\pm$ 7.0	17.9 $\pm$ 7.8	25.5 $\pm$ 7.1†	26.7 $\pm$ 7.2‡

\* Different from practice values.

† Different from nonstarters post game.

‡ Different from starters post practice.



coworkers (12) reported that real competition induces a greater hormonal response compared with laboratory exercise. Furthermore, recent studies have also reported large increases in cortisol during triathlon competition (32), wrestling matches (18), women's handball and volleyball matches (12), weightlifting competition (28), judo competition (11), and endurance competition lasting 6 hours (20), although none of these acute cortisol responses were as great as in the present study. This is because soccer is a sport that requires high levels of both aerobic and anaerobic abilities. The total distance covered by a male player averages about 10 km in 90 minutes, which is about 6.6 km per hour, and sprints once about every 30–90 seconds (16). Because of these physiological demands and the 90-minute duration of a soccer match, the stress hormone response to competition is greater than for many other sports. Kraemer and others (17) reported that starting collegiate male soccer players exhibited significant increases in resting serum cortisol concentrations after the middle of an 11-week season. The greater amount of physical stress in starters was attributed to their greater playing time. Similarly, we found a greater salivary cortisol response in starters compared with the response of nonstarters. These results indicate that in the present study, starters were under higher stress compared with nonstarters, supporting the findings of previous research.

The soccer athletes in the present study exhibited greater somatic and cognitive state anxiety during game conditions vs. practice, whereas self-confidence was decreased for nonstarters postgame and increased postpractice. Athletes in other sports have also exhibited significant game effects for cognitive and somatic state anxiety and self-confidence in elite golfers (26) and in judo players (11). Somatic state anxiety is related to the perception of physiological response to the psychological stress (12). The current findings indicate that the subjects perceived greater psychological stress as measured by somatic anxiety during the game than during the practice. Cognitive anxiety, which is associated with fear about the consequences of failure, is indicated by affirmative responses to such items as "I am concerned about performing poorly" (24). Our subjects reported higher cognitive anxiety during the game than during the practice. These results suggest that less or no playing time during the game contributes to the decrease of confidence level among these soccer athletes, at least during a losing game. Interestingly, the nonstarters showed higher confidence levels before practice and after practice compared with the starters. These anxiety and self-confidence values appear similar to previous values reported for collegiate and elite female soccer athletes (24).

Trait anxiety can influence state anxiety responses, so it is important to note that there were no significant differences in trait anxiety among the starters and nonstarters. Collectively, anxiety appeared to be augmented due to game conditions, whereas self-confidence may have been influenced by how much the athletes were able to contribute to the competitive outcome.

When evaluating the outcomes of this study, a number of mechanisms could have contributed to the results. Ambient environmental conditions are known to influence hormonal responses to physical activity. However, both the game and practice were held in comparable conditions and, as such, are not likely to have influenced the results. Cortisol is well documented to be released to the circulation in a diurnal fashion. However, the times of both

the game (1900–2100) and the practice (1500–1700) are not times when baseline cortisol differs (19). Therefore, we do not believe that the time of day influenced the differences observed in the cortisol response. All the subjects in the present study were women, although we speculate that this did not contribute to the hormonal response observed. Vervoorn and colleagues (33) suggested that cortisol is an appropriate hormone to monitor with female athletes because of the possible influence of the menstrual cycle on androgen values. In our subject pool, there was 1 player who had an irregular menstrual cycle and 3 players who took oral contraceptives. These subjects, however, exhibited similar salivary cortisol levels when compared with other players. Changes in the plasma volume during vigorous exercise can contribute to altered hormonal concentrations. It should be noted though, that the magnitude of salivary cortisol increase was extremely large (approximately 250%), and although plasma volume shifts were not measured in the present study, it is not physiologically possible that plasma volume shifts could account for the entire increase in salivary cortisol. There may have been some effect of carbohydrate ingestion on salivary cortisol during the soccer game due to sports drink consumption (average 1.9 cups per player), whereas all players drank only water during the practice session. Although all players were permitted to drink *ad libitum*, it is possible that fluid ingestion differed between the game and practice sessions. This could conceivably explain some of the differences in the salivary cortisol responses between the 2 conditions, although no difference in ingestion rates was noted by any of the research team or coaches. It is also possible that the salivary cortisol measure was not sensitive enough to the practice stresses because it is sampling several biocompartments away from the source of the cortisol. Previous studies have reported that carbohydrate supplementation can decrease cortisol responses compared with a placebo beverage during running and walking exercise (29). However, negligible influence of carbohydrate supplementation has been reported in cortisol responses after cycling exercise until fatigue (4) and soccer-specific exercise (3). Considering that carbohydrate intake may have diminished the cortisol response during the game, it is possible that the cortisol increase was underestimated in the present study. Regardless, this would not alter the final conclusions.

Of particular interest to this study is the role of game-related stress on the salivary cortisol response. Because competition typically creates a psychologically stressful environment, an anticipatory rise in cortisol has been reported precompetition (27). In contrast, there was no significant difference found in the present study between the pregame and the prepractice levels, indicating that we did not find an anticipatory salivary cortisol response to competition. The values of salivary cortisol in this study, however, exhibited much higher levels than mean baselines of salivary cortisol concentrations previously reported (1). An anticipatory response to both the game and practice may have caused the higher levels of salivary cortisol at pregame and prepractice than baseline values previously reported. It has also been reported that higher cortisol levels (11) and lower negative mood states (13) result for winners when compared with losers. It is possible that the salivary cortisol levels observed in the present study would have been different if our subjects had won the game (9).

No significant correlations were observed between salivary cortisol and competitive state anxiety, with the ex-





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# Examination of the psychometric properties of the Perceived Motivational Climate in Sport Questionnaire-2 in a sample of female athletes

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We undertook two studies to determine the validity and reliability of the revised Perceived Motivational Climate in Sport Questionnaire (PMCSQ-2). In Study 1, 201 female athletes (mean age 16.4 years) were administered the initial version of the PMCSQ-2 and a measure of reported tension and pressure experienced in sport. Exploratory principal component analysis suggested that the PMCSQ-2 contained two higher-order scales (Task-Involving and Ego-Involving climates), each with three subscales (Task: Cooperative Learning, Effort/Improvement, Important Role; Ego: Intra-Team Member Rivalry, Unequal Recognition, Punishment for Mistakes). In Study 2, 385 female volleyball players (mean age 15.2 years) completed the PMCSQ-2, the Intrinsic Motivation Inventory and a measure of Team Satisfaction. Confirmatory factor analysis was applied to six competing models. The oblique six-factor model and oblique hierarchical model provided comparable fit to the data. Acceptable fit was reached based on model respecification. Across Studies 1 and 2, internal consistency was found to be acceptable for the higher-order scales and subscales (with the exception of the Intra-Team Member Rivalry subscale). We found evidence for the concurrent validity of the instrument.

**Keywords:** achievement goals, anxiety, intrinsic motivation, motivational climate.

## Introduction

A central focus of sport participation is to promote skill development and enhance the participants' perceptions of competence, satisfaction and long-term motivation. Current social cognitive approaches to achievement motivation propose that variation in such achievement behaviours, perceptions and affective responses are linked to one's achievement goals (Nicholls, 1984, 1989; Ames and Archer, 1988; Elliott and Dweck, 1988). Two primary goal perspectives have been identified: task involvement and ego involvement. These perspectives represent different manners in which individuals construe their competence and perceive themselves to be successful in achievement contexts (Nicholls, 1989). When task-involved, individuals experience success when they try hard and improve their skill at an activity.

In this case, feelings of competence stem from personal improvement and task mastery through exerted effort. In contrast, ego-involved individuals tend to make judgements about subjective success through social comparison processes. The focus here is to demonstrate more competence. Consequently, when ego-involved, a person feels successful if his or her performance compares favourably with others or if he or she performs similarly with less effort.

It has been suggested that the adoption of a task- or ego-involved goal perspective while engaging in an achievement activity is a function of one's dispositional tendencies (or degree of task and ego orientation) and the characteristics of the achievement (Nicholls, 1989; Ames, 1992). With respect to the former, initial assessments of goal orientations were targeted towards the academic setting (see Nicholls, 1989). The Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda, 1989; Chi and Duda, 1995) and the Perceptions

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of Success Questionnaire (Roberts *et al.*, 1998) were subsequently developed to measure individual differences in the proneness for task- and ego-involved goal states in athletic contexts (Duda and Whitehead, 1998).

Early efforts to assess situational goal structures (also referred to as the motivational climate) were undertaken in the educational realm. Ames and Archer (1988) identified theoretical distinctions between what they termed a 'mastery' and a 'performance' climate in the classroom. The distinctions were based on differential evaluative classroom practices, the presence and extent of social comparison, the rewards and punishments distributed, and the quality of the interpersonal relationships being fostered in each motivational climate.

Recent research has tried to draw upon the model developed by Ames and her colleagues (Ames, 1984, 1992; Ames and Archer, 1988) and determine its utility in delineating similar dimensions of the motivational climate in the sport domain. Seifriz *et al.* (1992) developed the Perceived Motivational Climate in Sport Questionnaire (PMCSQ) to assess athletes' perceptions of the prominent motivational climate goal structures created by their coach. Congruent with classroom-based research, exploratory factor analysis of the PMCSQ revealed two major facets of the motivational climate operating on adolescent male basketball teams. Specifically, a perceived performance (or Ego-Involving) climate and a perceived mastery (or Task-Involving) climate were identified.

Close inspection of the items loading on the Ego-Involving motivational climate dimension indicated that this environment was characterized by the players perceiving they were punished when they made a mistake, that the coach primarily recognized and reinforced the better players, and that intra-team member rivalry was present on the team. In contrast, a Task-Involving climate was characterized by the perceptions that trying hard and improving were valued and that every member of the team had an important role to play.

Walling *et al.* (1993) tested more stringently the psychometric characteristics of the PMCSQ. Data gathered from adolescent males and females involved in a multi-sport amateur competition were subjected to confirmatory factor analysis. The *a priori* model consisted of the 21 items of the PMCSQ differentially loading on either the perceived Task-Involving factor or the perceived Ego-Involving factor. Four primary indices of fit were calculated to determine the suitability of the model. After the measurement errors among indicators within a scale were allowed to covary, the two-factor model fit indices were: chi-square/degrees of freedom ratio = 2.02, adjusted goodness of fit

index = 0.798, root mean square residual = 0.091. The two-factor model, however, contained considerable unexplained variance, particularly when measurement errors were not set free.

Both Seifriz *et al.* (1992) and Walling *et al.* (1993) reported results that offered preliminary support for the reliability and concurrent validity of the PMCSQ. Specifically, the Task-Involving and Ego-Involving scales were found to be internally consistent in both studies ( $\alpha = 0.80\text{--}0.82$  and  $0.80\text{--}0.84$ , respectively). In the study of Seifriz *et al.* (1992), athletes who perceived a highly task-involving motivational climate tended to experience greater enjoyment and overall intrinsic motivation, and were more likely to believe that effort would lead to success in sport, than athletes who felt that the coach created a team atmosphere that did not reflect a mastery or task goal perspective. Walling *et al.* (1993) reported positive associations between perceptions of a task-involving climate and team satisfaction and perceptions of an ego-involving climate and performance worry. These findings were consonant with theoretical predictions (Nicholls, 1989; Ames, 1992).

Although initial testing of the PMCSQ had supported its psychometric and concurrent validity (see Duda and Whitehead, 1998), Seifriz *et al.* (1992) and Walling *et al.* (1993) have indicated that the measure could be improved. In particular, it has been proposed that the PMCSQ might be strengthened by conceptualizing the motivational climate in a hierarchical manner with subscales underlying the higher-order Task-Involving and Ego-Involving scales. This suggestion was in line with Ames' initial conceptual framework that viewed task-involving and ego-involving motivational climates as composites of several underlying dimensions or characteristics of the larger environment (Ames, 1984, 1992; Ames and Archer, 1988).

In the present work, two studies were conducted to examine the development of a multi-dimensional, hierarchically structured measure of the perceived motivational climate in sport. Based on the conceptual framework of Ames (1984, 1992; Ames and Archer, 1988) and the nature of the content of the original PMCSQ items (Seifriz *et al.*, 1992), the aims of Study 1 were to expand the original questionnaire and to develop a hierarchical measure of the motivational climate in sport, called the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2). We also explored the first version of the PMCSQ-2's factor structure and examined its concurrent validity and reliability. Based on the results of Study 1, the aims of Study 2 were to further refine the PMCSQ-2, examine its factor structure (using confirmatory factor analysis), and determine the instrument's internal reliability and concurrent validity.

## Study 1

### Methods

#### Participants

A total of 201 female volleyball and basketball players from 21 high school and collegiate teams in the USA volunteered to participate in the study. Specifically, the participants were recruited from 12 high school basketball teams, two college basketball teams, six college volleyball teams and one high school volleyball team. The only demographic information requested was the players' age (mean =  $16.4 \pm 2.2$  years; range = 13–23 years).

#### Assessments and procedure

Data collection was performed at least one-quarter of the way into the competitive season to ensure that a motivational climate had been established on the teams sampled. In a classroom setting before a team practice, those players who consented to participate were asked to complete the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2) and a sport-specific measure of reported anxiety in sport. This latter variable was assessed via the Pressure/Tension subscale of the Intrinsic Motivation Inventory (McAuley *et al.*, 1989). The principal investigator, a trained assistant or a team manager administered the questionnaires. In each case, a detailed administration protocol was followed. The players were encouraged to answer the questionnaire items honestly and to ask questions if needed. The coach of each team was asked to leave the room while the questionnaires were being completed, which took about 20 min.

Item development for the PMCSQ-2 was based on the situational structures suggested to underlie the task-involving and ego-involving climate dimensions outlined in previous classroom and sport research (Ames, 1984, 1992; Ames and Archer, 1988; Seifriz *et al.*, 1992; Walling *et al.*, 1993). More specifically, the task-involving climate structures targeted were the degree to which effort was emphasized, the extent to which personal improvement was reinforced, the belief that each member had an important role on the team, and the perception that mistakes were viewed as part of the learning process. Items reflecting an emphasis on cooperation and cohesion within the team were added based on previous work that has linked task-oriented goals with an emphasis on cooperation and the belief that working with others leads to success (Chambliss, 1989; Duda and Nicholls, 1992). The inclusion of such items was also compatible with the hypothesized link between a task-involving atmosphere and cooperative groupings proposed by Ames (1992). In contrast, the

three ego-involving climate dimensions included the extent to which rivalry between players was promoted, unequal recognition of players was exhibited, and that mistakes were punished.

Beyond what was contained in the original PMCSQ (Seifriz *et al.*, 1992; Walling *et al.*, 1993), 300 additional items were generated to assess the hypothesized underlying dimensions of the motivational climate. A panel of experts evaluated the face validity of the 300 items. This consisted of classifying each item onto one of the proposed characteristics of the motivational climate as well as rating each item (on a 5-point Likert scale, with 1 = poor fit, 5 = very good fit) on how well it captured the targeted structure. Items were retained only when there was 100% agreement among the panel and it was rated as a 'good fit' or 'very good fit'. This resulted in a final pool of 42 items, which were then integrated with the 21 items of the original PMCSQ to form the 63-item PMCSQ-2.

When completing the PMCSQ-2, participants were asked to think about what it was like playing for their particular team over the course of the season. More specifically, they were requested to contemplate what the atmosphere was usually like on their team. Each item was preceded by the stem 'On this team . . .'; participants responded using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

To examine the concurrent validity of this first version of the PMCSQ-2, the Pressure/Tension subscale of the Intrinsic Motivation Inventory (McAuley *et al.*, 1989) was also administered. Responses were indicated using a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). In line with previous work (McAuley *et al.*, 1989; Duda *et al.*, 1995), the internal consistency of the Pressure/Tension subscale ( $\alpha = 0.71$ ) was found to be acceptable.

### Results

#### *Exploratory evaluation of the factor structure and internal reliability of the PMCSQ-2*

Psychometric evaluation of the 63-item Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2) began by assessing the internal consistency of the seven hypothesized subscales. Items which had low corrected item-total correlations (below 0.40) and which reflected poorly on the total scale consistency were deleted. This resulted in the elimination of nine items.

Principal component exploratory factor analysis, with both varimax and oblique rotations and without specification of the number of retained factors, was conducted on the remaining 54 items. Eleven factors with eigenvalues greater than 1.0 emerged. Items that



failed to load on a particular factor at a value of 0.40 were deleted. Principal component analyses were performed (varimax and oblique rotations) on the remaining items. A 30-item, six-factor solution emerged. The oblique rotation failed to converge, and thus the varimax rotation was retained.

The six factors that were revealed were conceptually similar to the climate dimensions suggested by Ames (1992) and Seifriz *et al.* (1992). However, the retained solution resulted in the deletion of the 'mistakes are part of learning' climate structure and collapsing of the proposed effort and improvement scales into one factor. More specifically, the dimensions found to underlie a Task-Involving motivational climate were labelled Effort/Improvement, Important Role, and Cooperative Learning. Those structures comprising an Ego-Involving climate were labelled Intra-Team Member Rivalry, Unequal Recognition, and Punishment for Mistakes. The six-factor solution accounted for 61.3% of the response variance.

*Internal consistency.* The internal consistency of each resulting subscale and the proposed higher-order Task-Involving and Ego-Involving scales was examined by Cronbach's coefficient alpha (Cronbach, 1951). Both higher-order scales demonstrated adequate internal consistency (Task-Involving climate,  $\alpha = 0.87$ ; Ego-Involving climate,  $\alpha = 0.89$ ). Two of the three subscales assessing facets of a Task-Involving motivational climate, namely Effort/Improvement ( $\alpha = 0.83$ ) and Important Role ( $\alpha = 0.77$ ), exhibited adequate consistency; the third subscale, Cooperative Learning ( $\alpha = 0.66$ ), was found to possess marginal internal consistency. Similarly, two of the three subscales of an Ego-Involving motivational climate were found to possess acceptable internal consistency: Unequal Recognition,  $\alpha = 0.93$ ; Punishment for Mistakes,  $\alpha = 0.80$ . The coefficient alpha observed for the Intra-Team Member Rivalry subscale was marginally acceptable ( $\alpha = 0.66$ ).

*Concurrent validity of the PMCSQ-2.* Simple correlations were computed between the Pressure/Tension subscale of the Intrinsic Motivation Inventory and the six subscales and two hypothesized higher-order factors of the PMCSQ-2. Based on previous work examining the link between motivational climate and performance-related worry (Seifriz *et al.*, 1992; Walling *et al.*, 1993), we hypothesized that a positive relationship would emerge between perceptions of an Ego-Involving motivational climate and the experience of anxiety in sport. We further predicted that positive relationships would emerge between the three dimensions of an Ego-Involving motivational climate (Intra-Team Member Rivalry, Unequal Recognition, and Punishment for

Mistakes) and perceptions of Pressure/Tension. These predictions are also based on the tenets of goal perspective theory, which suggest that situations that focus on the adequacy of individuals' ability and the comparison of competence between athletes, tend to be particularly anxiety-provoking (Nicholls, 1989). Perceptions of a Task-Involving team atmosphere (and its three underlying dimensions) were predicted not to be associated with reported Pressure/Tension.

Consistent with our hypotheses, the results indicated that Pressure/Tension was not significantly related to the perception of an overall Task-Involving motivational climate or any of the task-involving subscales. In line with our predictions, scores on the Pressure/Tension subscale were positively and significantly related, but in a small way, to the total Ego-Involving climate scale ( $r = 0.28$ ,  $P < 0.001$ ) score and the specific structures of Intra-Team Member Rivalry ( $r = 0.21$ ,  $P < 0.001$ ), Unequal Recognition ( $r = 0.17$ ,  $P < 0.01$ ) and Punishment for Mistakes ( $r = 0.30$ ,  $P < 0.001$ ). These latter findings suggest that other factors (such as individual differences in trait anxiety) contribute to the prediction of Pressure/Tension in sport, besides perceptions of the motivational atmosphere.

### Discussion

In Study 1, we tried to extend previous work on the Perceived Motivational Climate in Sport Questionnaire (Seifriz *et al.*, 1992; Walling *et al.*, 1993) and to develop a multi-dimensional, hierarchically structured questionnaire designed to assess perceptions of the overriding dimensions comprising the motivational climate in the athletic domain. Principal component analysis revealed that the PMCSQ-2 captured six dimensions of the motivational climate; these were labelled Effort/Improvement, Important Role, Cooperative Learning, Intra-Team Member Rivalry, Unequal Recognition, and Punishment for Mistakes.

Deviations from the proposed dimensions underlying the motivational climate did emerge. Notably, the effort and improvement components collapsed to form one dimension termed Effort/Improvement. Possibly, the distinction between effort and improvement is not clearly demarcated in athletes' perceptions of what is emphasized on their team. To improve in the athletic setting, one must try hard, and the present results suggest that coaches emphasize this interconnection in their interaction with athletes.

Additionally, items comprising the Improvement and Cooperation scales merged to form one dimension named Cooperative Learning. This may have been because, in team sports in particular, one reason for cooperating with one's team-mates is to improve the execution of a particular play or skill. As with effort

and improvement, the concepts of learning and collaborating with one's team-mates seem to be inextricably linked when interpreting the dominant goal structures on athletic teams.

It should be noted that findings for the cooperation dimension might have been influenced by the nature of the sample. Only females were recruited to the study. It is possible that, because of potential sex-based variability in socialization experiences, performance expectations, and previous interactions with coaches and team-mates, males have a different interpretative framework when perceiving the critical facets underlying the motivational climate on athletic teams. Thus, a somewhat different constellation of motivational climate dimensions might have emerged if the sample had been all males. This possibility should be explored in future research.

Finally, in Study 1, the proposed 'mistakes are part of learning' dimension did not emerge as a viable factor. The results suggest that the athletes did not distinguish such a dimension of the overriding climate operating on their teams. It is possible that the items developed to tap this structure (e.g. 'On this team, the coach understands that mistakes are part of learning') did not adequately capture this facet of the motivational climate for the volleyball and basketball players in this sample. Alternatively, the coaches in this sample may not have been particularly adept at conveying to their athletes the concept that mistakes are part of the learning process. That Punishment for Mistakes emerged as a factor might also have contributed to this finding. It might be that athletes' concern with the negative ramifications associated with making a mistake results in a less apparent identification of the conditions when mistakes are framed as potential opportunities to learn and improve.

In Study 1, preliminary support was provided for the internal consistency of the PMCSQ-2. The two proposed higher-order factors, Task-Involving climate and Ego-Involving climate, exhibited good internal consistency. Adequate consistency was also reported for the subscales of the PMCSQ-2, with the exception of the Cooperative Learning and Intra-Team Member Rivalry subscales. This may have been due to the small number of items ( $n = 3$ ) contained in each of these subscales.

Preliminary evidence for the concurrent validity of the PMCSQ-2 was also obtained. In line with our hypotheses, athletes who perceived an overall Ego-Involving climate – and, more specifically, felt as if some players received all the attention and accolades, that the coach tended to pit player against player on the same team in a rivalrous manner, and that they would be punished if they made errors – tended to report greater pressure and tension while playing and practising volleyball and basketball. It may be that the social

comparative nature of the dimensions, which comprise an Ego-Involving climate, function to impel athletes to attend to their perceived competence in a more ego-involved manner (Dweck and Leggett, 1988; Treasure and Roberts, 1998). We can understand how being encouraged to outdo one's own team-mates, feeling the looming threat of punishment for undesirable performance, and experiencing an environment entailing differential treatment may be stressful for high- and low-ability athletes.

In summary, the findings of Study 1 offer preliminary support for the validity and reliability of the PMCSQ-2. Building on these findings, the aims of Study 2 were to further refine the PMCSQ-2 and further explore its content structure, reliability and validity.

## Study 2

### Methods

#### Participants

The participants were 385 female volleyball players recruited from 45 teams participating in a national junior volleyball competition on the West Coast of the USA. The players were aged 14–18 years (mean =  $15.2 \pm 1.7$  years). Participants were recruited from 45 teams in three age-group divisions: 14 years and under, 16 years and under, and 18 years and under.

#### Assessments and procedure

In a group setting between or after games in a dining area at the tournament site, participants were asked to complete a multi-section inventory consisting of the Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2), an abbreviated sport-specific version of the Intrinsic Motivation Inventory (McAuley *et al.*, 1989) and a four-item measure of Team Satisfaction (Walling *et al.*, 1993). Ensuring that the team's motivational climate was firmly established, data collection took place towards the end of a competitive season. The inventory took approximately 20 min to complete. About 50% of the coaches were present during administration of the questionnaire. Such coaches were given a different survey to complete in a location that was removed from the athletes, to prevent intrusion and possible biasing of the participants' responses.

The 30-item PMCSQ-2 that emerged in Study 1 was adapted and expanded slightly for use in Study 2. One item from Study 1 ('On this team, the players are a "tight-knit" group') was inadvertently dropped from the measure. Because of the limited number of items, two additional items were generated for the Important Role subscale ('On this team, the coach believes that all the

players are crucial to the success of the team' and 'On this team, each player feels as if they are an important team member'). Similarly, two items were developed for the Cooperative Learning subscale ('On this team, the players really "work together" as a team' and 'On this team, the players help each other to get better and excel'). These changes resulted in a 33-item measure (see Appendix for items). When completing the revised PMCSQ-2, the athletes were asked to think about playing for their particular team over the course of the season and recall what it is usually like on this team. Each item was preceded by the stem 'On this team . . .'; participants responded using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree).

The players were asked to complete the Effort/Importance, Pressure/Tension and Enjoyment/Interest subscales of the Intrinsic Motivation Inventory (McAuley *et al.*, 1989). Responses were indicated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). The Cronbach coefficient alphas in this study indicated that the subscales were internally consistent (Pressure/Tension,  $\alpha = 0.76$ ; Enjoyment/Interest,  $\alpha = 0.85$ ), although the value exhibited by the Effort/Importance subscale was marginal ( $\alpha = 0.67$ ).

A four-item measure of the athletes' reported enjoyment of being a member of their team, termed Team Satisfaction, was also administered (Walling *et al.*, 1993). An example item is 'I enjoy playing on this team'. Participants responded to the items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The computed alpha coefficient ( $\alpha = 0.87$ ) suggested that the measure was internally consistent.

### Data analysis

To further operationalize the underlying construct of the PMCSQ-2, measurement models of linear structural equations were applied to questionnaire data collected in Study 2 after a strategy of data analysis, namely model-generating, suggested by Joreskog and Sorbom (1993). The model-generating approach is designed to test a tentative, initial model followed by assessment of model fit 'in relation to what is known about the substantive area, the quality of the data, and the extent to which various assumptions are satisfied' (Joreskog and Sorbom, 1993, p. 120). If the results of the assessment indicate a lack of fit based on empirical or substantive evidence, the model should be modified within a class of models appropriate for the substantive problem. The goal of *post-hoc* fitting or model respecification is to identify a model or models that can provide both a statistically acceptable fit and a substantively meaningful interpretation of the data. However, any respecification of models without substantive justification should be avoided in all cases (Bollen, 1989).

A measurement sub-model of the LISREL program (Joreskog and Sorbom, 1993) was used to establish the dimensionality or factor structure of the PMCSQ-2, which had not been done in stringent construct validity tests in previous work. However, because our understanding of the factor structure of the PMCSQ-2 was limited, the specifications of parameter estimation in the original models in Study 2 were based on the factor loading patterns of the PMCSQ-2 from the explanatory factor analysis in Study 1. Six competing models were hypothesized:

- an orthogonal two-factor model (Model 1) with two first-order factors (Task-Involving and Ego-Involving climate);
- an oblique two-factor model (Model 2) with two first-order factors (Task-Involving and Ego-Involving climate);
- a six-factor orthogonal model (Model 3) with six first-order factors (Important Role, Cooperative Learning, Effort/Enjoyment, Intra-Team Member Rivalry, Recognition, and Punishment);
- an oblique six-factor model (Model 4) with six first-order factors (Important Role, Cooperative Learning, Effort/Enjoyment, Intra-Team Member Rivalry, Recognition, and Punishment);
- an orthogonal hierarchical model (Model 5) with two orthogonal sets of first-order factors (Important Role, Cooperative Learning, and Effort/Enjoyment in set 1, a Task-Involving Climate; and Intra-Team Member Rivalry, Recognition, and Punishment in set 2, an Ego-Involving Climate) and two orthogonal second-order factors (Task-Involving and Ego-Involving climate);
- an oblique hierarchical model (Model 6) with six first-order factors (Important Role, Cooperative Learning, Effort/Enjoyment, Intra-Team Member Rivalry, Recognition, and Punishment) and two second-order factors (Task-Involving and Ego-Involving climate).

The six original models tested in the present study followed *a priori* that: (a) responses to the PMCSQ-2 could be explained by the hypothesized construct; (b) items related to one factor will have non-zero loadings on this factor and zero loadings on the other factors; (c) the hypothesized factors are oblique (i.e. correlated); and (d) the errors of measurement are specific and random. Data analysis was conducted using LISREL 8 (Joreskog and Sorbom, 1993). The parameters were estimated by analysing the covariance matrix with the maximum likelihood estimation method. Assessment of model fit was conducted using various types of overall fit indices for the hypothesized construct model and individual parameter fit,

as suggested by Bollen (1989), Joreskog and Sorbom (1989) and Kelloway (1998).

Chi-square ( $\chi^2$ ) tests the absolute fit of the hypothesized model with the population covariance matrix. It is well known that this index is sensitive to sample size and data distribution (Joreskog and Sorbom, 1989). However, the difference in  $\chi^2$  between two nested models (which has  $\chi^2$  distribution with degrees of freedom, d.f.) can be used to assess improvement in the more restricted model. In this study, several other indices were used in combination to assess model fit. The goodness-of-fit index is based on a ratio of the sum of the squared discrepancies between the observed and population variance. The adjusted goodness-of-fit index adjusts the goodness-of-fit index for degrees of freedom in the hypothesized model. A discrepancy between these two indices suggests that trivial or non-significant parameters are specified in the model. The normed fit index and non-normed fit index indicate the amount of improvement in fit over a baseline independent model, with the non-normed fit index being adjusted to the number of degrees of freedom in the model. The comparative fit index was also proposed by Bentler (1990) to assess improvement in fit of the hypothesized model compared with a completely independent model.

These indices range from 0 to 1, with a value of 0.90 or more as a conventional cut-off for indicating a good model fit. However, some researchers (Bollen, 1989; Kelloway, 1998) have suggested that relying on a single criterion with the 0.90 cut-off as an acceptance standard is somewhat arbitrary and unsubstantiated. For example, Hu and Bentler (1999) reported that, when using a single index as the criterion in model evaluation, the cut-off for acceptable fit should be 0.95 or higher. A different perspective on this issue is that the focus should instead be on evaluating multiple indices and identifying the better-fitting model among competing models. This was the approach adopted in the current research.

The parsimony normed fit index and parsimony goodness-of-fit index were designed to conduct the cost-benefit trade-off of fit and degrees of freedom. Since they rarely exceed a value of 0.90, a value above 0.70 usually represents an acceptable parsimonious model. These indices are used to compare two competing theoretical models for identifying the highest level of parsimony fit (Kelloway, 1998). Root mean square error of approximation indicates that amount of unfitted residuals between the implied and observed covariance matrices. Values less than 0.10 are interpreted as a reasonable fit, whereas values below 0.05 indicate very good fit of the data (Steiger, 1990). The use of root mean square error of approximation in fit assessment is becoming more popular given its

unique characteristics as a fit index (Steiger, 1990; Fan *et al.*, 1999).

In addition, the estimate and squared multiple correlation for individual variables (each questionnaire item) and hypothesized subscales (e.g. the six subscales of the PMCSQ-2) were used to assess whether each item or subscale was measured adequately. A *t*-value associated with each estimate was calculated by dividing its unstandardized estimate by its standard error. A value greater than 1.96 indicates the parameter was significantly different from zero. Squared multiple correlation measures the variance explained by the model in each observed variable.

Finally, two empirical indices of poor model fit were used to identify problematic parameter specification in the six original models. Fitted residuals indicate the difference between the covariance matrix of the hypothesized models and the covariance matrix of observed data. A standardized residual was calculated by dividing the fitted residual by its asymptotic standard error. A parameter estimate may be considered problematic if a standardized residual exceeds an absolute value of 2.59 (Joreskog and Sorbom, 1989). The modification index calculates the decrease in model  $\chi^2$  that could otherwise be gained if a parameter is allowed to be estimated. Modification indices above 5.00 are normally treated as statistically large enough for consideration in model respecification (Kelloway, 1998).

## Results

### Confirmatory factor analysis

*Assessment of overall model fit.* The overall fit indices for the hypothesized models are presented in Table 1. Overall, all indices of fit, as well as the difference in  $\chi^2$ , indicated that the data fit was better in oblique models (Models 2, 4 and 6) than in orthogonal models (Models 1, 3 and 5). Furthermore, Models 4 and 6 fitted the data better than Model 2. The parsimony normed fit index and parsimony goodness-of-fit index also suggested that Models 4 and 6 were more parsimonious than the rest. Closer study of all fit indices indicated that the root mean square error of approximation was below 0.08 only in the case of Models 4 and 6, indicating a reasonable fit for these two models. The remainder of the indices were all outside the ranges of the commonly accepted standards of fit. This lack of support for model fit was unexpected, since these models were developed based on factor loading patterns from Study 1 and previous studies (Seifriz *et al.*, 1992).

In a recent study, Fan *et al.* (1999) found that certain fit indices are highly dependent on sample size and less sensitive to model mis-specification. However, the



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Table 1. Comparison of indices of fit among the proposed and respecified measurement models

Model	$\chi^2$	d.f.	$\Delta\chi^2$	$\Delta$ d.f.	GFI	AGFI	RMSEA	NFI	NNFI	CFI	PNFI	PGFI
1	2052	495			0.70	0.66	0.11	0.58	0.61	0.64	0.54	0.62
2	1949	494	103.04***	1	0.71	0.67	0.10	0.60	0.64	0.66	0.56	0.62
2a	1756	491	192.34***	3	0.73	0.69	0.098	0.64	0.68	0.71	0.59	0.64
2b												
2c	1553	430			0.74	0.70	0.098	0.64	0.68	0.71	0.59	0.64
2d	1334	346			0.76	0.71	0.10	0.66	0.70	0.72	0.61	0.64
3	1848	495			0.73	0.70	0.096	0.62	0.66	0.69	0.58	0.64
4	1286	480	562.28***	15	0.81	0.78	0.071 <sup>a</sup>	0.72	0.79	0.80	0.67	0.70
4a	1157	477	128.86***	3	0.83	0.80	0.064 <sup>a</sup>	0.76	0.82	0.84	0.69	0.71
4b	1058	474	99.00***	3	0.85	0.82	0.059 <sup>a</sup>	0.78	0.85	0.86	0.70	0.71
4c	880.4	416			0.86	0.83	0.057 <sup>a</sup>	0.80	0.87	0.88	0.71	0.72
4d	695.9	337			0.88	0.85	0.054 <sup>a</sup>	0.82	0.89	0.90	0.73	0.73
5	1409	489			0.80	0.77	0.074 <sup>a</sup>	0.71	0.77	0.79	0.66	0.70
6	1328	488	80.61***	1	0.81	0.78	0.072 <sup>a</sup>	0.73	0.79	0.81	0.67	0.70
6a	1200	485	127.96***	3	0.83	0.80	0.065 <sup>a</sup>	0.75	0.82	0.83	0.69	0.72
6b	1104	482	95.72***	3	0.84	0.82	0.060 <sup>a</sup>	0.77	0.84	0.86	0.70	0.72
6c	920.2	424			0.86	0.83	0.058 <sup>a</sup>	0.79	0.86	0.87	0.72	0.73
6d	711.5	341			0.88	0.85	0.054 <sup>a</sup>	0.82	0.89	0.90	0.74	0.74

Abbreviations:  $\chi^2$  = chi-squared, d.f. = degrees of freedom,  $\Delta\chi^2 = \chi^2$  difference between two nested models;  $\Delta$ d.f. = degrees of freedom associated with  $\Delta\chi^2$ , GFI = goodness-of-fit index, AGFI = adjusted goodness-of-fit index, RMSEA = root mean square error of approximation, NFI = normed fit index, NNFI = non-normed fit index, CFI = comparative fit index, PNFI = parsimony normed fit index, PGFI = parsimony goodness-of-fit index.

Note: Model 1 is the orthogonal two-factor model; Model 2 is the oblique two-factor model; Model 3 is the orthogonal six-factor model; Model 4 is the oblique six-factor model; Model 5 is the orthogonal hierarchical model; Model 6 is the oblique hierarchical model. In Models 2a, 4a and 6a, error covariance between items 13 and 29 and between items 14 and 28 were freed. In Models 2b, 4b and 6b, items 24 and 32 were cross-loaded. In Models 2c, 4c and 6c, items 24 and 32 were eliminated from the model. In Models 2d, 4d and 6d, items 6, 12 and 24 were excluded from the model.

<sup>a</sup> Upper limit of 90% confidence interval for the root mean square error of approximation was <0.10; \*\*\*  $P < 0.001$ .

root mean square error of approximation was shown to be the most resistant to mis-specified models and the least sensitive to the influence of estimation method and sample size among common fit indices in a Monte Carlo simulation study (Fan *et al.*, 1999). Therefore, in the current study, the observed acceptable low root mean square error of approximation, together with the relatively low sample size (given the number of items), suggests a weak but at least reasonable fit for Models 4 and 6.

*Assessment of individual parameter estimates.* Assessments of fit for individual variables (see Table 2) for Models 4 and 6 indicated that all factor loadings were at least 0.40, with *t*-values above 1.96 (the parameter estimate divided by the standard error). This suggested that each item was adequately measured. The coefficients of determination (squared multiple correlations) ranged from 0.17 to 0.70, with *t*-values above 1.96, in Models 4 and 6. These results further suggest that each questionnaire item contributed significantly to the assessment of its underlying construct (Joreskog and Sorbom, 1989).

Indices related to the adequacy of the measurement model for the second-order factors are presented in Table 3. The parameter estimates for the Task-Involving climate subscales were acceptable. The *t*-values ranged from 6.74 to 7.00, which are greater than the 1.96 criterion used for statistical significance. Furthermore, the squared multiple correlations suggested that each of the three subscales was correctly specified onto a second-order factor.

Similar and acceptable results were found for the Unequal Recognition subscale of the Ego-Involving dimension of the motivational climate. It should be noted, however, that the *t*-value was statistically significant but low. The adequacy indicators for Punishment for Mistakes and Intra-Team Member Rivalry suggest that the subscales need to be refined. Specifically, the relatively low factor loading and squared multiple correlation for the Punishment for Mistakes subscale suggest that measurement of the construct could be improved. With respect to the Intra-Team Member Rivalry subscale, the *t*-value was relatively low (although statistically significant), the standard error was greater than optimal, and the squared multiple correlation indicated that a significant proportion of the variance was unaccounted for by the construct.

*Respecification of the PMCSQ-2 measurement models.* Since we are still at an early stage in the development of the PMCSQ-2, the unsatisfactory model fit prompted the inspection of the fitted standardized residuals. The questionnaire items with the largest unfitted standardized residuals (>2.59 in absolute value) were

items 8, 13, 14, 16, 24, 28, 29 and 32, with values ranging from 5.99 to 9.82. A closer examination of these items led to the following observations.

First, it appeared that items 8 and 16, items 13 and 29, and items 14 and 28 had very large modification indices, ranging from 40.7 to 96.4 (equivalent to  $\chi^2$  drop in the model). These values indicate that the error covariance between these pairs should be allowed to correlate. Since the item content in these pairs was similar [e.g. 'the coach has his/her own favourites' (item 13) and 'the coach favours some players more than others' (item 29)], their measurement errors (i.e. error variance) can be closely correlated (Pedhazur and Pedhazur Schmelkin, 1991). Estimation of error covariance associated with these item pairs can help to control for non-random disturbance in the hypothesized models.

Secondly, large modification values indicated that item 24 should be assigned to the Intra-Team Member Rivalry subscale (modification indices of 42.6 in Model 4 and 28.1 in Model 6) as well as the Punishment for Mistakes subscale (modification indices of 49.2 in Model 4 and 47.1 in Model 6), and that item 32 should be assigned to the Cooperative Learning subscale (modification indices of 39.9 in Model 4 and 41.2 in Model 6). The wording of item 24 ('if you want to play in a game you must be one of the best players') suggested the item also touched upon a potentially within-team rivalrous aspect of team sport participation and did not refer overtly to punishment for mistakes, and thus can also be assigned to the Intra-Team Member Rivalry subscale. On the other hand, item 32 was initially added to the Important Role subscale to increase the number of items in the subscale without determination of its face validity. It is apparent that the item can also be interpreted as an aspect of Cooperative Learning, since this item taps the value placed on being 'an important team member'. Although these findings do make conceptual sense, it should be emphasized that the cross-loading of questionnaire items on more than one factor violates the criterion of exclusive association rule in questionnaire development. The avoidance of such cross-loading in further refinements of the PMCSQ is warranted.

Based on the above empirical and substantive analysis of model fit, the three original oblique models were respecified as follows: in Model 2a, Model 4a and Model 6a, the error covariances between items 8 and 16, items 13 and 29, and items 14 and 28 were allowed to be correlated. In Model 2b, Model 4b and Model 6b, item 24 was allowed to cross-load on the Unequal Recognition, Punishment for Mistakes, and Intra-Team Member Rivalry subscales, and item 32 was allowed to cross-load on both the Important Role and Cooperative

**Table 2.** Maximum likelihood estimates for the first-order factors of the hierarchical model (standardized factor loading/standard error/*t*-value)

Item	Cooperative Learning	Important Role	Effort/Improvement	Punishment for Mistakes	Unequal Recognition	Intra-Team Member Rivalry	SMC
1			0.41/0.07/6.06				0.17
2				0.79/0.05/15.24	0.70/0.12/5.99		0.62
3							0.50
4		0.64/0.08/7.75					0.40
5		0.65/0.08/7.81					0.42
6						0.57/0.10/5.89	0.32
7				0.50/0.09/5.39			0.25
8			0.43/0.07/6.25	0.61/0.05/11.37			0.18
9							0.37
10							0.41
11	0.61/0.08/7.61	0.64/0.08/7.78				0.49/0.09/5.59	0.38
12					0.78/0.13/6.12		0.24
13			0.68/0.84/16.35				0.61
14							0.70
15			0.58/0.08/7.59	0.84/0.05/16.35			0.70
16					0.60/0.10/5.74		0.33
17				0.68/0.05/12.88			0.36
18							0.46
19							0.55
20		0.74/0.09/8.26	0.54/0.07/7.29				0.29
21	0.64/0.08/7.80						0.41
22					0.70/0.12/5.98		0.49
23						0.52/0.09/5.76	0.27
24					0.47/0.09/5.27		0.22
25			0.54/0.07/7.32		0.71/0.12/6.01		0.30
26							0.51
27				0.53/0.06/9.75			0.29
28			0.68/0.08/8.25				0.46
29					0.78/0.13/6.12		0.61
30			0.58/0.08/7.61				0.34
31	0.60/0.08/7.91	0.66/0.08/7.91					0.36
32							0.44
33	0.79/0.10/8.29						0.62

Abbreviation: SMC = squared multiple correlation.

**Table 3.** Maximum likelihood estimates for the second-order factors of the hierarchical model (standardized factor loading/standard error/*t*-value)

PMCSQ-2 subscales	Task-Involving	Ego-Involving
Cooperative Learning	0.85/0.12/6.74	
Important Role	0.85/0.13/6.80	
Effort/Improvement	0.85/0.12/7.00	
Punishment for Mistakes		0.46/0.07/6.27
Unequal Recognition		0.84/0.19/4.60
Intra-Team Member Rivalry		0.74/0.15/4.92

Learning subscales. In Model 2c, Model 4c and Model 6c, both items 24 and 32 were deleted from the hypothesized models to adjust for factor cross-loading. In Model 2d, Model 4d and Model 6d, the Intra-Team Member Rivalry subscale was eliminated from the model to adjust for its weak scale consistency, which was below commonly accepted standards for basic research.

The results of *post-hoc* fit are displayed in Table 1. Of the nested models, Models 2a, 4a and 6a had significant improvement over their original oblique model, as shown by the difference in  $\chi^2$  and the sizeable drop in the root mean square error of approximation in Models 4a and 6a. Only slight changes, however, were observed in the rest of the fit indices.

In Model 4b, item 24 had a loading of 0.22 (standard error, SE = 0.091,  $t = 2.42$ ) on Unequal Recognition, 0.29 (SE = 0.09,  $t = 3.27$ ) on Punishment for Mistakes and 0.40 (SE = 0.13,  $t = 3.05$ ) on Intra-Team Member Rivalry. Item 32 had a loading of 0.53 (SE = 0.073,  $t = 7.27$ ) on Cooperative Learning and 0.28 (SE = 0.073,  $t = 3.81$ ) on the Important Role subscale. In Model 6b, item 24 had a loading of 0.19 (SE = 0.11,  $t = 1.74$ ) on Unequal Recognition, 0.39 (SE = 0.68,  $t = 5.73$ ) on Punishment for Mistakes and 0.37 (SE = 0.11,  $t = 3.28$ ) on Intra-Team Member Rivalry. Item 32 had a loading of 0.52 (SE = 0.088,  $t = 5.98$ ) on Cooperative Learning and 0.27 (SE = 0.078,  $t = 3.52$ ) on the Important Role subscale. Significant improvement in fit (difference in  $\chi^2$ ) over the previous model supported cross-loading of items 24 and 32 on multiple factors. This lent support for proceeding to the next set of models.

In Models 2c, 4c and 6c, all fit indices improved further owing to the elimination of the two cross-loaded items. While the root mean square of approximation in Models 4c and 6c dropped below 0.06, the non-normed fit index and comparative fit index approached 0.90, and the parsimony normed fit index and parsimony goodness-of-fit index were above 0.70. Finally, the

elimination of the Intra-Team Member Rivalry subscale provided the best fit over all previous models in Models 2d, 4d and 6d. At this point, Models 4d and 6d had reached a reasonable fit, in which the root mean square error of approximation dropped to 0.054, the comparative fit index reached the acceptable standard of 0.90, and the goodness-of-fit index and non-normed fit index approached 0.90. The parsimonious normed fit index and parsimonious goodness-of-fit index also approached the mid-0.70's, suggesting a high degree of parsimony.

In summary, the *post-hoc* fitting produced acceptable fit in Model 4d and Model 6d based on a combination of studying the empirical evidence of model fit and substantive interpretation of problematic fits. The findings from the model respecification exercise suggest that the dimensionality of items 24 and 32, as well as the viability of the Intra-Team Member Rivalry subscale, should be investigated further. On the other hand, interpretation and generalization of the findings from the *post-hoc* fitting should be performed with caution, since the process of model respecification unduly increases the Type I error rate. Cross-validation of the revised PMCSQ-2 with new data is imperative to verify the *post-hoc* results.

#### Internal consistency

Cronbach's alphas were calculated for both the second-order factors and each subscale (Cronbach, 1951). The second-order Task-Involving ( $\alpha = 0.88$ ) and Ego-Involving ( $\alpha = 0.87$ ) scales proved to be internally consistent. All three Task-Involving subscales – Cooperative Learning ( $\alpha = 0.74$ ), Important Role ( $\alpha = 0.79$ ) and Effort/Improvement ( $\alpha = 0.77$ ) – were also found to be internally consistent. In terms of the Ego-Involving subscales, Unequal Recognition ( $\alpha = 0.86$ ) and Punishment for Mistakes ( $\alpha = 0.82$ ) were internally consistent, but the Intra-Team Member Rivalry subscale once again exhibited low internal consistency ( $\alpha = 0.54$ ). Its items demonstrated consistently high factor loadings and stability in Study 1 and Study 2, and appears to represent a meaningful component of the conceptual construct. Therefore, this subscale was included in subsequent analyses. We recommend, however, that the psychometric attributes of the Intra-Team Member Rivalry subscale should be assessed further.

#### Inter-factor correlations

Table 4 presents the correlations provided by confirmatory factor analysis between the subscales and second-order factors of the PMCSQ-2 for Model 4 and Model 6. All correlations among and between the subscales were significant and in the expected

**Table 4.** Correlations between hypothesized factor dimensions for the six-factor solution and hierarchical models

	1	2	3	4	5	6	7	8
1. Cooperative Learning	1.00	-0.14	-0.46	0.70	-0.39	0.74		
2. Punishment for Mistakes	-0.27	1.00	0.44	-0.24	0.60	-0.23		
3. Unequal Recognition	-0.50	0.44	1.00	-0.64	0.59	-0.52		
4. Important Role	0.71	-0.30	-0.55	1.00	-0.37	0.74		
5. Intra-Team Member Rivalry	-0.39	0.35	0.63	-0.43	1.00	-0.41		
6. Effort/Improvement	0.69	-0.29	-0.53	-0.76	-0.42	1.00		
7. Task Climate	0.80	-0.34	-0.62	0.88	-0.49	0.86	1.00	
8. Ego Climate	-0.56	0.49	0.90	-0.61	0.71	-0.60	-0.69	1.00

Note: All correlations are significant at  $P < 0.05$ . Correlation coefficients for the six-factor model are above the diagonal and coefficients for the hierarchical model are below the diagonal.

direction. Correlations of 0.80–0.88 were found between the Task-Involving scale and the Cooperative Learning, Important Role, and Effort/Improvement subscales. The Ego-Involving scale related significantly and positively with its three subscales ( $r = 0.49$ – $0.90$ ).

*Concurrent validity of the PMCSQ-2.* To examine the concurrent validity of the PMCSQ-2, simple correlations were calculated between the dimensions of motivational climate and the indices of intrinsic motivation and Team Satisfaction (Table 5). Mean scale scores for each individual subscale (e.g. Important Role) and both second-order factors were used in the analysis. Based on goal perspective theory and the work of Seifriz *et al.* (1992), we hypothesized that perceptions of a Task-Involving motivational climate would be positively associated with interest in, and enjoyment of, volleyball and that perceptions of an Ego-Involving motivational climate would correspond positively with the experience of Pressure/Tension. We further hypothesized that the Task-Involving dimensions of Effort/Improvement and Cooperative Learning would be positively associated

with Enjoyment/Interest in volleyball. All three dimensions of an Ego-Involving goal structure were predicted to be positively related to Pressure/Tension.

The literature suggests that a positive but weak relationship should emerge between a Task-Involving motivational climate and perceptions of exerted Effort/Importance (Seifriz *et al.*, 1992). A positive relationship was also predicted between the subscale of Effort/Improvement and exerted Effort/Importance. No significant relationships between scores on the Effort/Importance subscale and perceptions of an Ego-Involving climate or the three underlying dimensions were expected.

Finally, in line with the results of Walling *et al.* (1993), we hypothesized that team satisfaction would be positively associated with the perception of a Task-Involving climate and its dimensions and inversely related to the perception of an Ego-Involving motivational climate and its respective subscales.

As can be seen in Table 5, a clear pattern of results emerged that supported the hypotheses and offer support for the concurrent validity of the PMCSQ-2.

**Table 5.** Correlations between perceived motivational climate and the underlying dimensions with indices of intrinsic motivation

Perceived motivational climate	Intrinsic Motivation			
	Effort/Importance	Pressure/Tension	Enjoyment/Interest	Team Satisfaction
<b>Task-Involving</b>				
Important Role	0.25***	-0.24***	0.52***	0.41***
Cooperative Learning	0.21***	-0.26***	0.42***	0.31***
Effort/Improvement	0.20***	-0.19***	0.47***	0.38***
	0.24***	-0.17**	0.45***	0.37***
<b>Ego-Involving</b>				
Intra-Team Member Rivalry	-0.12**	0.40***	-0.31***	-0.20***
Punishment for Mistakes	-0.10*	0.24***	-0.17***	-0.14**
Unequal Recognition	-0.02	0.40***	-0.14**	-0.08
	-0.16**	0.31***	-0.41***	-0.25***

\*  $P < 0.05$ , \*\*  $P < 0.01$ , \*\*\*  $P < 0.001$ .



In general, team members who perceived a Task-Involving climate on their team were more likely to be intrinsically motivated. In contrast, the perception of an Ego-Involving motivational climate was negatively related to the adaptive facets of intrinsic motivation and positively associated with the perception of Pressure/Tension.

All predictions were substantiated for the relationship that emerged pertaining to the task climate subscales. The Task-Involving climate dimensions of Effort/Improvement and Cooperative Learning correlated positively with the Enjoyment/Interest facet of intrinsic motivation. The three subscales of an Ego-Involving motivational climate were positively related to Pressure/Tension. Weak but positive associations were found between the motivational climate dimension of Effort/Improvement and the perceived effort displayed and importance placed on volleyball. Although the Ego-Involving climate subscales were significantly and negatively related to Effort/Importance, the strength of the associations was minimal.

Additionally, in line with our hypotheses, Team Satisfaction was positively related to the perception of a Task-Involving team climate. The Important Role, Cooperative Learning, and Effort/Improvement subscales were similarly and positively associated with Team Satisfaction. In contrast, the more a player perceived an Ego-Involving motivational climate on their team and, in particular, a climate that endorsed unequal Recognition among players, the less Team Satisfaction they reported.

### Discussion

The aim of Study 2 was to test more stringently the validity of the PMCSQ-2. Of particular interest were two distinct yet related questions, the first of which was how best to conceptualize the motivational climate. Six competing models, in which the respective components were considered independent or correlated, were assessed: a two-subscale, a six-subscale and a hierarchical representation of the climate. Our second question dealt with how well the PMCSQ-2 measured the motivational climate as conceptualized in the models.

Confirmatory factor analysis was used first to test the validity of the six models in relation to the PMCSQ-2. Overall, the data provided a weak but reasonable fit to Model 4 (the six-factor solution) and Model 6 (the hierarchical solution). This assessment was reached based on the unique characteristics of the root mean square error of approximation; that it, this index is most resistant to model mis-specification and least influenced by sample size (Fan *et al.*, 1999). Psychometric support for Models 1 and 2 (the two-factor model) was not forthcoming.

The parsimony of model fit was slightly higher in Model 6d (respecified hierarchical model) than Model 4d (respecified six-factor model), although both the original Models 4 and 6 fitted the data similarly. Thus, based on these results, there is justification for endorsing a hierarchical model.

Psychometrically, the maximum likelihood estimates for the second-order factors (see Table 3) suggest that the subscales were correctly assigned to the higher-order factors. Additionally, the correlation between the higher-order factors (Task-Involving and Ego-Involving) and their respective subscales were significant and positive (see Table 4). Overall, these findings substantiate the utility of conceptualizing the motivational climate in a hierarchical manner.

Theoretically, goal perspective theory (Nicholls, 1989) and the work of Ames (1992) state that two dominant goal structures exist in achievement settings. These goal structures are theoretically presumed to influence differential manners in which individuals judge their ability. Early efforts at assessment and measurement of goal structures focused naturally on the general qualities of the two types of motivational climates (e.g. Seifriz *et al.*, 1992). The more recent development of subscales, however, is no less linked to the premise that task and ego goal structures are one factor which 'sets the stage' for an emphasis on a task or ego conception of ability in that setting. That is, the hypothesized hierarchical model (assumed to underpin the PMCSQ-2) remains true to the tenets of goal perspective theory, yet advances how the motivational climate is conceptualized.

We expected the internal consistency of the two higher-order scales and six subscales to be acceptably high; that prediction was partially supported. The Task-Involving higher-order scale and its three subscales exhibited acceptable internal consistency. The Ego-Involving higher-order scale and two of its subscales (Punishment for Mistakes and Unequal Recognition) were similarly internally consistent.

Consistent with Study 1, the Intra-Team Member Rivalry subscale proved to be problematic in terms of internal consistency. That the participants were female volleyball players may have influenced this finding. Coaches, and the female athletes themselves, may be less likely to provide and participate fully in rivalrous training drills and interactions.

The concurrent validity of the PMCSQ-2 was also supported in Study 2. In line with our predictions, the Effort/Importance component of intrinsic motivation was positively associated with perceptions of a Task-Involving motivational climate and the specific dimension of Effort/Improvement. Significant relationships were also found between Effort/Importance and the Cooperative Learning and Important Role subscales

and athletes' overriding perceptions of a Task-Involving team climate. Equally important, from a practical viewpoint, were the negative and significant findings in relation to Effort/Importance and perceptions of an Ego-Involving Motivational climate. This association was minimal, however. Clearly, a cornerstone of athletic development is trying one's best. The present results suggest that the promotion of a Task-Involving climate on a team is more productive in fostering this facet of motivation. These findings also suggest that a perceived Ego-Involving climate is not necessarily detrimental to the effort exerted and importance placed on sport by female athletes.

We also hypothesized that enjoyment of, and interest in, volleyball would correlate positively with a Task-Involving climate and the Effort/Improvement and Cooperative Learning subscales (Seifriz *et al.*, 1992). These predictions were supported. In addition, however, Enjoyment/Interest was positively associated with the view that all players had an Important Role on the team and inversely related to the perception of an Ego-Involving motivational climate (and scale scores on the three underlying dimensions, particularly the Unequal Recognition component). Previous research has reported that a major source of satisfaction and enjoyment in sport is the opportunity to master skills and improve in one's sport (Smith *et al.*, 1983, 1995; Scanlan *et al.*, 1989). Thus, motivational climates that do not reinforce the salience of self-referenced skill improvement – and, in contrast, support a concern about the comparative adequacy of one's competence – would be less enjoyable for athletes.

In line with predictions and previous research (Seifriz *et al.*, 1992; Study 1), athletes who perceived a more Ego-Involving motivational climate (and the three underlying facets of such an atmosphere) were likely to report greater feelings of Pressure/Tension while playing their sport. An Ego-Involving motivational atmosphere appears conducive to athletes feeling as though they must prove continuously their athletic worth in relation to other players. It also appears to be the environment in which poor performance and errors lead to reprimand by the coach. Such an atmosphere produces stress, perhaps in particular among individuals with low perceived ability.

Finally, in agreement with previous work (Walling *et al.*, 1993; Treasure and Roberts, 1998) and the current hypotheses, perceptions of a Task-Involving motivational climate correlated positively with Team Satisfaction, while perceptions of an Ego-Involving atmosphere were inversely related to Team Satisfaction. The long-term ramifications of these findings are unknown. It is logical to assume that athletes who are satisfied with their teams would be more likely – if possible – to continue participating with those teams

in the years to come. Future studies should examine the inter-dependencies between the perceived motivational climate, satisfaction with one's team-mates and persistence.

## Conclusions

Ames (1984), Ames and Archer (1988), Epstein (1989) and Walling *et al.* (1993) have argued that the motivational climate is multi-faceted. Those dimensions include how success or achievement is defined, the bases and nature of recognition and evaluation, the typical responses to errors, and the ways in which individuals are expected to act and interact within and between groups. The two studies presented here provide initial support for the multi-dimensional hierarchical structure of the 33-item self-report Perceived Motivational Climate in Sport Questionnaire-2 (PMCSQ-2).

Future research should examine the factorial structure and internal consistency of the PMCSQ-2 among both male and female athletes in a variety of sports. The internal consistency and general adequacy of the Intra-Team Member Rivalry subscale might be improved by increasing the number of items in the subscale and refining the vernacular used in the language of the items. The current results suggest that this subscale is psychometrically suspect, but appears to be a viable component of a larger ego-involving atmosphere.

To validate the measure further, studies should examine the relationship between overt coaching behaviours and responses to the PMCSQ-2 (Duda, in press). In accordance with the work of Treasure and Roberts (1998), we also suggest that the long-term motivational ramifications of participating on a Task-Involving or Ego-Involving team should be examined. In particular, examining how perceptions of the motivational climate interact with, are impacted by, and influence dispositional goal orientations over time might yield important insights into the socialization of individual differences in goal perspectives and the interplay of situationally emphasized and dispositional goals on achievement patterns (Ntoumanis and Biddle, 1998).

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## Appendix: Perceived Motivational Climate in Sport Questionnaire-2

*Directions:* Please think about how it has felt to play on your team throughout this season. What is it usually like on your team? Read the following statements carefully and respond to each in terms of how you view the typical atmosphere on your



team. Perceptions naturally vary from person to person, so be certain to take your time and answer as honestly as possible. Circle the number that best represents how you feel.

*Note:* Each item is responded to on a 5-point Likert-type scale (1 = strongly disagree; 5 = strongly agree).

1. On this team, the coach wants us to try new skills.
2. On this team, the coach gets mad when a player makes a mistake.
3. On this team, the coach gives most of his or her attention to the stars.
4. On this team, each player contributes in some important way.
5. On this team, the coach believes that all of us are crucial to the success of the team.
6. On this team, the coach praises players only when they outplay team-mates.
7. On this team, the coach thinks only the starters contribute to the success of the team.
8. On this team, players feel good when they try their best.
9. On this team, players are taken out of a game for mistakes.
10. On this team, players at all skill levels have an important role on the team.
11. On this team, players help each other learn.
12. On this team, players are encouraged to outplay the other players.
13. On this team, the coach has his or her own favourites.
14. On this team, the coach makes sure players improve on skills they're not good at.
15. On this team, the coach yells at players for messing up.
16. On this team, players feel successful when they improve.
17. On this team, only the players with the best 'stats' get praise.
18. On this team, players are punished when they make a mistake.
19. On this team, each player has an important role.
20. On this team, trying hard is rewarded.
21. On this team, the coach encourages players to help each other.
22. On this team, the coach makes it clear who he or she thinks are the best players.
23. On this team, players are 'psyched' when they do better than their team-mates in a game.
24. On this team, if you want to play in a game you must be one of the best players.
25. On this team, the coach emphasizes always trying your best.
26. On this team, only the top players 'get noticed' by the coach.
27. On this team, players are afraid to make mistakes.
28. On this team, players are encouraged to work on their weaknesses.
29. On this team, the coach favours some players more than others.
30. On this team, the focus is to improve each game/practice.
31. On this team, the players really 'work together' as a team.
32. On this team, each player feels as if they are an important team member.
33. On this team, the players help each other to get better and excel.

**Exhibit 6**

## FAIRNESS AND ENJOYMENT IN SCHOOL SPONSORED YOUTH SPORTS

Warren Whisenant and Jeremy S. Jordan

*University of Miami, USA*

**Abstract** The purpose of this study was to expand upon research in organizational justice by introducing the construct into a school sponsored sports setting from a sociological perspective. Three dimensions of organizational justice – distributive justice, procedural justice, and interpersonal justice – were assessed to determine if the fairness of coaches, as perceived by their student athletes ( $N = 259$ ), was associated with the sports the students' enjoyed participating in the most or the least. Two research questions answered by this study were: 1) do fairness perceptions differ between the sport the students enjoy the most and the sport they enjoy the least, and 2) did those perceptions influence the students' desire to continue participating in those referent sports. The findings indicated that perceptions of each of the three dimensions differed between the referent sports selected by the student athletes, and those differences were significant ( $p < .001$ ). The findings also suggested that a linear relationship existed between each dimension and their intent to continue playing the referent sports.

**Key words** • organizational justice • sports

Research directed at the relationship between student athletes and their coaches is important in that the behavior of coaches may impact the players' desire to continue playing sports. An important component of that relationship is the level of fairness used by coaches when making decisions which impact athletes. While most organizational justice research has been drawn from management and psychology literature, this study attempts to sever, what Sage (1997) referred to as 'intellectual boundaries' which may have in the past cast doubt on the relevance of framing organizational justice studies in the realm of sociological research. With the primary focus of Sociology being on the interaction between social relationships and the attitudes and behaviors derived from those relationships (Schaefer, 2004), coach/player interactions fall well within the domain of sociology research.

Few changes have occurred in the structure and purpose of school sponsored sports over the past century (Sage, 1998). Sports have been promoted as an integral part of the educational experience when the physical wellness attributes of sport participation are combined with the intellectual acquisition which occurs in the classroom (Kanaby, 2003). Sport exposes students to the dynamics of organizational culture which in turn influence the sociological outcomes of sport participation. Supporters of sports in the schools have summarized the numerous

benefits derived from participation (NFHS, 2003) as supporting the overall academic mission of the schools (higher grades, better attendance, lower dropout rates, fewer discipline problems), providing practical life skills learning (self-discipline, teamwork, and self-confidence), and promoting success in life after graduation. Participation in interscholastic sports has also been found to increase the likelihood of lifelong participation in sports as an adult as well as positively correlated with income earnings as an adult (Curtis et al., 1999, 2003).

While the adults who control school sponsored sports see athletic participation as a critical component of the educational process, Sage (1997) notes Coleman's perspective, 'that high school athletics is more important as a value among high school students than intellectual achievements' (p. 325). Students take a more pragmatic view of sport participation. Research has consistently demonstrated that participation is driven by one or more of three dominant factors: the student athletes' craving to hone and exploit their physical skills; the need for social interaction and support from significant individuals in their lives; and the desire to have fun (Butcher et al., 2002; Weiss, 2000; Weiss et al., 2001). Lumpkin et al. (2003) propose that students often drop out of sports when they no longer have fun participating, due to issues associated with their perceptions of fairness fostered within the schools' athletic programs. As such, a better understanding of the factors which influence the climate of fairness in athletics, framed within the context of organizational justice, can assist in moderating fairness perceptions, thus potentially reducing dropout rates.

### Organizational Justice

The concept of justice has received much attention in the social sciences over the last 40 years (Colquitt, 2001). This area of research has attempted to determine the criteria used by individuals when developing perceptions of justice (fairness) and the influence these perceptions have on various attitudes and behaviors. Recent work by Colquitt and colleagues (Colquitt, 2001; Colquitt et al., 2001) established that organizational justice is most likely composed of separate constructs, three of which are distributive justice, procedural justice, and interpersonal justice. Distributive justice is defined as the perceived fairness of outcomes received by an individual (Adams, 1965), similar to other allocation theories which suggest outcomes should be distributed equally to all members (Deutsch, 1975; Lerner, 1975). Procedural justice is centered on the processes used to determine the outcomes (Leventhal, 1980; Thibaut and Walker, 1975). Interpersonal justice was initially introduced by Bies and Moag (1986), who suggested that interpersonal justice was based on the treatment and quality of information received by an individual in a work setting. Greenberg (1990), Colquitt (2001), and Colquitt et al. (2001) demonstrated that interpersonal justice is based on the extent to which an individual is treated with respect, dignity and in a polite manner by personnel representing the organization or who occupy decision-making positions.

Organizational justice research in the social sciences has demonstrated that the aforementioned constructs collectively and individually influence an individual's perceptions of fairness. Research has also shown a relationship between percep-

tions of fairness and numerous employee attitudes and behaviors such as job satisfaction (Martin and Bennett, 1996), organizational commitment (Sweeney and McFarlin, 1993), citizenship behaviors (Moorman, 1991), as well as turnover and absenteeism (Masterson et al., 2000). There has been discussion that these relationships might also be evident within a sport context (Chelladurai, 1999; Greenberg et al., 1985; Jordan et al., 2004). However, there have been only a limited number of attempts to study the influence of organizational justice in sport.

### **Organizational Justice and Sport**

The first application of organizational justice theory in a sport setting was by Greenberg et al. (1985) who theorized distributive and procedural justice principles could influence the perceived fairness of outcomes and processes used in sport and games. The authors suggested that the structures, processes, and dynamics of sport would provide a context to study the influence of organizational justice on the attitudes and behaviors of sport participants. Additionally, they suggested that this line of inquiry would expand the overall understanding of organizational justice not only within the domain of sport, but for other types of organizations as well.

Currently, organizational justice research in sport has begun to examine the influence of multiple justice constructs on individual perceptions of fairness. Jordan et al. (2004) proposed that relationships between justice constructs and employee attitudes and behaviors evident in non-sport organizations might be applicable in a team sport setting. These authors suggested that improving player perceptions of fairness might lead to increased satisfaction, commitment and desire to continue participating in the sport. An initial attempt to study the influence of justice constructs on the attitudes of players found a relationship between organizational justice (distributive, procedural, and interpersonal justice) and high school student-athletes' level of commitment to a particular sport (Whisenant, 2005). Players who had positive perceptions of the three justice constructs demonstrated higher levels of commitment and were more likely to continue their participation in their referent sport. Whisenant and Jordan (2006) found that a positive relationship also existed between organizational justice perceptions and team performance. The present study is an extension of this line of research which has studied the influence of organizational justice among players in school sponsored sports. The first objective was to determine if the justice dimensions differed between the sport the students enjoyed the most and the sport the students enjoyed the least. The second objective was to determine the extent to which each of the justice dimensions influenced the students' desire to continue participating in those same referent sports.

### **Methodology**

The subjects for the study were student athletes from six high schools in Texas. Parental consent forms were sent home with approximately 1400 student athletes.

The following day, those students who were granted permission to participate in the study by their parents gathered during their regularly scheduled time period allocated for sports to complete the questionnaire. To minimize the likelihood that the responses of the students might be influenced by their coaches, coaches were denied entry into the testing area.

The instrument used to collect the fairness data was based upon the Justice Measure developed by Colquitt (2001). To ensure the students considered all of their sports when making their referent selections to answer the fairness questions, the athletes were first asked to identify all the sports they had played that year in high school. The students were then asked to identify the sport they enjoyed playing the most. They were then instructed to use that sport as the referent sport when responding to the fairness statements. The students were then instructed to turn the questionnaire over and similarly complete the survey using the sport they enjoyed playing the least that year as their referent sport. The average of the multiple responses within each of the sections was then used to determine the level of perceived fairness within each dimension with higher scores indicating more positive perceptions of fairness. The students were also asked if they intended to continue their participation in the referent sport during the next season. A Likert-type scaled response of 1 to 10, with 10 being strongly agree and 1 being strongly disagree was used to assess intent to continue participation.

Paired Samples Statistics were used to compare the mean responses of each of the three dimensions for the analyses addressing the first research question. Pearson's correlation coefficient was used to answer the second research question. An alpha level of .05 was used for all analyses. The measure instrument developed by Colquitt was found to have a reliability ranging from .90 to .93 (Colquitt and Shaw, 2005), the reliability coefficients for this study produced an alpha of .77.

## Results

Parental approval for participation was given to 630 students. Of those students, 41 percent ( $n = 259$ ) provided data on both sports. Student demographics are provided in Table 1. The sex of the participants – boys 59 percent and girls 41 percent – closely aligned with national participation rates. The ethnic composition of the sample was as follows: 33 percent Black/African American; 36 percent Hispanic; 29 percent White; and 2 percent indicated an ethnicity other than the three previously mentioned. This demographic was representative of the state's student population. The majority of the students were freshmen (39%), while 25 percent were second year students, 24 percent were juniors, and the fewest participants being seniors (12%). Frequency counts of the students by the referent sports they used to respond to the questions regarding fairness perceptions are listed in Table 1.

The first objective was to determine if the justice dimensions differed between the sport the students enjoyed the most and the sport the students enjoyed the least. Table 2 contains the descriptive statistics for each of the justice

**Table 1 Referent Sports**

Sport	Enjoyed the most		Enjoyed the least	
	Boys	Girls	Boys	Girls
Baseball	18	n/a	9	n/a
Basketball	26	15	34	18
Football	73	n/a	23	n/a
Other	6	2	15	9
Soccer	10	11	12	1
Softball	n/a	17	n/a	12
Tennis	1	3	5	1
Track & cross-country	20	21	56	33
Volleyball	n/a	30	n/a	29
Powerlifting	0	6	0	2

Note: Other includes golf, swimming, wrestling, cheerleading, and dance.

**Table 2 Correlations of Fairness Perceptions and Intent to Continue Participation**

Enjoyed most		(PJ)	(DJ)	(IJ)
Continue participation	( $M = 6.32$ ; $SD = 1.46$ )	.170*	.243*	.238*
$R^2$		.029	.059	.057
Procedural justice (PJ) ( $M = 5.0$ ; $SD = 1.2$ )				
Distributive justice (DJ) ( $M = 5.6$ ; $SD = 1.3$ )				
Interpersonal justice (IJ) ( $M = 5.7$ ; $SD = 1.2$ )				
Enjoyed least		(PJ)	(DJ)	(IJ)
Continue participation	( $M = 4.86$ ; $SD = 2.51$ )	.271*	.295*	.349*
$R^2$		.076	.084	.112
Procedural justice (PJ) ( $M = 4.7$ ; $SD = 1.5$ )				
Distributive justice (DJ) ( $M = 5.0$ ; $SD = 1.6$ )				
Interpersonal justice (IJ) ( $M = 5.3$ ; $SD = 1.5$ )				

Note:  $p < .05^*$ ; continue participation data excludes seniors ( $n = 228$ ).

dimensions. For each dimension the differences between the sport the students liked most and liked least were significant: procedural justice  $t(258) = 3.694$ ,  $p < .001$ ; distributive justice  $t(258) = 4.869$ ,  $p < .001$ ; and interpersonal justice  $t(258) = 3.775$ ,  $p < .001$ .

The second objective was to determine the extent to which each of the justice dimensions influenced the students' desire to continue participating in the referent sports. The findings indicated a linear relationship did exist between each of the justice dimensions and the students' intent to continue participating in the referent sport they liked most and liked least. These findings are also noted in Table 2.

## Discussion

While the numerous studies previously cited have indicated that having fun is the leading factor influencing the level of enjoyment the athlete experiences through participation, coaches play a critical role in influencing the level of enjoyment athletes experience. The findings of this study provide greater insight into the influence coaches have over the organizational climate within their teams. The findings also support previously held, yet untested, presumptions that the perceptions of fairness held by athletes influence their attitudes toward the sports they play. While there may be some sociological skepticism about standardized tests such as the justice measure developed by Colquitt (2001), no other suitable alternative instrument was available which met the needs of this study. In this study, for each of the three dimensions of organizational justice, the perceptions of fairness held by the athletes regarding their coaches' behavior differed significantly between a referent sport the athletes enjoyed playing the most and a referent sport the athletes enjoyed the least. While perceptions of fairness were positive for both groups of sports – those sports they enjoyed most and those they enjoyed least – the level of fairness was greater for the sports the students enjoyed most. Within each of the three dimensions, the fairness perceptions were consistent regarding how each dimension ranked in fairness. For both the referent sports the students enjoyed most or least, interpersonal justice perceptions were the most positive ( $M = 5.7$  and  $M = 5.3$ ). Distributive justice followed for both groups with positive levels of fairness ( $M = 5.6$  and  $M = 5.0$ ). The lowest perception levels were for procedural justice ( $M = 5.0$  and  $M = 4.7$ ).

The degree to which students intended to continue playing a sport was significantly influenced by the athletes' perceptions of fairness within the context of each of the three justice dimensions explored in this study. As indicated in Table 2, the correlations among the justice dimensions and the athletes' intentions to continue playing were significant for both groups of the referent sports. The justice dimensions were most influential on the sports the students enjoyed least. Integrating the findings of the two research objectives provides a greater understanding of how organizational justice impacts sports participation among high school students.

Overall, student athletes who participated in the study indicated that they felt they were treated with dignity and respect by their coaches, as indicated by the responses associated with interpersonal justice. When assessing this dimension in conjunction with the student's intent to continue playing the referent sport, interpersonal justice had the greatest influence over the likelihood of continued participation in the sport the athlete enjoyed least. This would suggest that the treatment of the athletes by their coaches plays an integral part in establishing the student's level of enjoyment. When enjoyment from participation diminishes, the likelihood that the student will continue participating in the sport is reduced. With that relationship at the forefront, athletic directors who see a large dropout rate within one sport might expect to find coaches who fail to show their athletes the proper level of respect or treatment. Improvements in retention and reductions in self-elimination may be accomplished by focusing on the coach's interpersonal interactions with the athletes.



There are a limited number of outcomes in sport (i.e. playing time, position, etc.) and the allocation of these outcomes is often not based on the principle of equity. It is not uncommon for players who put forth the most effort to not receive the outcomes they would prefer, such as playing time or earning a starting position. While research has extensively shown that winning is not the driving force behind participation, student athletes may have reconciled that for their coaches, winning is the most important outcome of sports competition or participation. As a result, the students understand that the coaches play to win, so decisions regarding athlete participation in competition are left to the coaches. The decisions made by the coaches are given the benefit of the doubt by the students, trusting that decisions are focused on the goal of winning. The outcomes based upon those decisions do, however, have a greater impact on the sports the students like the least. One factor may be that students might question the decisions made by the coach when the students are rationalizing a decision to discontinue participating in a sport.

Fairness perceptions associated with procedural justice were also positive for both groups of the sports. Coaches generally do not afford athletes much decision control or decision influence, particularly during the time of competition. If players feel they have limited 'voice' in the processes of the team and the distribution of outcomes, they are likely to experience lowered perceptions of fairness for decision processes used by coaches. Their experience may have demonstrated to them that one level of consistency among all coaches and sports tends to be that the better players get more playing time than the less talented players. As a result, the processes used to determine outcomes associated with playing time are consistent and somewhat free from bias among sport organizations. The students may also recognize that mechanisms for dealing with incorrect decisions made by the coaches are evident. These changes come in the form of roster changes and changes in game plans based upon the level of success the team may be having at the time of competition.

An organizational climate embracing fairness is a critical factor influencing student athletes' attitude towards the sports they participate in and their desire to continue participation. As found to be the case in the work of Butcher et al. (2002), coaches have a significant influence on self-elimination in sport. If the coaches reduce the level of fun the athlete experiences or the social interactions are diminished or the student no longer has the opportunity to hone his or her athletic skills, the probability of sport self-elimination increases. Coaches have the opportunity to reduce the likelihood of self-elimination by building strong interpersonal relationships with their athletes by treating them with dignity and respect during multiple and complex decision processes. The athletes appear to be less concerned with decision outcomes and the processes used by the coaches to arrive at their decisions. For sport administrators, when making staffing decisions regarding coaches, they should place a great deal of emphasis on the communication and interpersonal skills possessed by the coaching candidates to help the athletic program maximize student participation.

For the overwhelming majority of the students participating in interscholastic athletics, their competitive sport careers end at high school graduation. For many, their experiences shape their self-esteem, personal self-worth, and may



influence their social standing in their communities. The behaviors they experience while in high school can shape how they will behave in organizational environments long after they leave high school. With athletics being so entrenched in the educational process, further studies associated with organizational justice in sport are needed. Areas of further study should include perceptions of justice over the participation lifespan of student athletes or over the course of a season in a longitudinal study. Work could also involve the inclusion of group value and attribution theories of organizational justice in sports.

As Greenberg et al. (1985) suggested two decades ago, sport organizations are mini-social systems that impact society in many ways and as such will provide a greater understanding of how organizations outside of sport function. Understanding how student athletes perceive decision outcomes within the context of organizational justice while involved in sport, may provide the foundation as to how they will behave in organizations as adults. With sport participation playing such an integral role in the educational and socialization process of young adults, every effort to minimize the likelihood of sport elimination should be undertaken.

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Miami. Dr Jordan's research focuses on organizational behavior and human resource management issues within sport organizations. Journal articles published by Dr Jordan have appeared in the *International Journal of Sport Management*, *International Sports Journal*, *Physical Educator*, *Recreational Sport Journal* and the *International Review for the Sociology of Sport*. Dr Jordan has served as a member of the NASSM Executive Council and is a member of the *Journal of Sport Management* editorial board.

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**Exhibit 7**

# Motivational climate and goal orientations as predictors of perceptions of improvement, satisfaction and coach r...

Isabel Balaguer

*Scandinavian Journal of Medicine & Science in Sports*

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# Motivational climate and goal orientations as predictors of perceptions of improvement, satisfaction and coach ratings among tennis players

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One purpose of this work was to study the relationship of goal orientations and the perceived motivational climate created by the coach in relation to 219 competitive Spanish tennis players: a) perceived improvement in different facets of the game, b) satisfaction with their competitive results, overall level of play, and coach, and c) ratings of their coach. The second purpose was to examine whether the dependent variables were best predicted by the perceived situationally emphasized goal structure created by the coach and/or the athletes' dispositional goal perspective. Intermediate (N=70), advanced (N=124), and professional (N=25) level players completed Spanish versions of the TEOSQ and the PMCSQ-2 and items assessing perceived improvement specific to tennis, satisfaction and coach ratings. The results were consistent with the tenets of goal perspective theory and provide further support for the promotion of a task-involving atmosphere in sport.

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Key words: motivational climate; goal orientations; performance improvement; coaching; tennis

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During this past decade, goal perspective theory (1–3) has played an important role in the study of achievement motivation in sport (4–6). This theory holds that there are two primary goal perspectives operating in this achievement activity (namely, task and ego involvement), which relate to different ways of defining success and judging one's competence. When task-involved, perceived ability is self-referenced and emphasis is placed on task mastery, the exertion of effort, and development of one's skills or knowledge of the activity. When ego-involved, individuals are concerned with demonstrating normatively referenced high ability and, thus, perceive a successful event when they think that they have surpassed others or performed equally with less effort.

Researchers (1–3) suggest that social situations created by significant others (such as teachers, coaches, parents) can impact the probability of whether an athlete will be task- or ego-involved when she participates in sport. Environments that are highly competitive (within and between teams) entail the public

evaluation of skills, emphasize normatively based feedback which favors the highly able, and/or are punitive when mistakes are made are more likely to be perceived as ego-involving (7, 8). In contrast, situations emphasizing effortful involvement over outcome, personal improvement, and collective contributions tend to be viewed as task-involving.

It is assumed that whether an athlete is task- and/or ego-involved in sport is also impacted by dispositional goal perspectives or her/his degree of task and ego orientation. According to Nicholls (3), these "individual differences in proneness to the different types of involvement" (p. 95) are orthogonal and sport research has supported his assertion (6).

The literature to date suggests that an examination of goal perspectives (whether operationalized as dispositional goal orientations, and/or the perceived motivational climate) provides insight into variations in the motivational processes of individuals involved in athletic activities. For example, task and ego orientations have been found to differentially predict ath-



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letes' perceptions of the purposes of sport, beliefs about the causes of success, enjoyment of and interest in the activity, sportspersonship attitudes, participation motives, and anxiety and coping strategies in a conceptually consistent manner (6, 9, 10). Further, perceptions of the motivational environment operating on sport teams have been linked to variability in enjoyment, satisfaction with team membership, intrinsic motivation, beliefs about the determinants of success, self-efficacy, and perceived functions of sport participation (6). In general, and consistent with theoretical tenets (1–3), this work has indicated that a focus on task-involved goals is associated with adaptive motivation-related cognitions, emotional responses, and beliefs in the sport context (5).

Less attention, however, has been given to examining the potential impact of goal perspectives on performance and other variables fundamental to persistence in sport and physical activities (6). This is particularly true in the context of skilled athletic performance (11). Currently, in the goal perspective literature, there is an interesting debate regarding whether the motivation-related advantages of task involvement (and disadvantage of ego involvement) hold for samples including elite competitors (11–13). One purpose of this study was to extend previous work and examine the relationship of the perceived motivational climate created by the coach and dispositional goal orientations to intermediate, advanced, and professional level tennis players': 1) perceived improvement in the technical, tactical, physical and psychological facets of their tennis performance, 2) satisfaction with their recent competitive results, level of play, and degree of individualized training provided by their coach, and 3) ratings of their coach in reference to an ideal (preferred) coach and the importance of the coach with respect to the athlete's learning and improvement. These variables would be critical if we are interested in the likelihood of skilled athletes staying with a particular coach and the probability of their persisting and improving in the sport in question.

This study also examined the degree to which the dependent variables of interest were a function of dispositional goal orientations, the perceived situational goal structure, or both factors. Duda and Nicholls (14) have argued that, as these variables are more dispositional and stable in nature, overall attitudes toward and views about sport will primarily be predicted by athletes' goal orientations. Perceptions and cognitive responses tied to the sport context at hand (or, especially in the case of younger athletes; 15) are expected to be best predicted by the perceived motivational climate operating in the particular athletic context. Cognizant of Duda and Nicholls' (14) suggestions and recognizing that the current sample was composed of adolescents, we hypothesized that vari-

ations in perceptions of the motivational climate would emerge as the best predictor of indices of perceived improvement, satisfaction, and coach ratings examined in this study. More specifically, we expected that the tennis players would perceive greater improvement in dimensions of their game, be more satisfied with their results, level of play and coach's individualized training, indicate a greater preference for their coach, and rate their coach as more important in the athletes' development when the atmosphere created by their coach is deemed more task-involving.

**Method**

*Sample.* A total of 219 tennis players (73 female and 116 male) from clubs throughout Spain participated voluntarily in this study. Their mean age was  $15.6 \pm 2.1$  years and mean years of tennis experience was  $7.3 \pm 2.7$  years. The subjects ranged in skill level representing the intermediate (32.1%), advanced (56.6%), and professional (11.3%) levels of tennis competition.

*Assessments and procedure.* In the training setting, the subjects were given (by the third author or a trained assistant) a multi-section inventory containing measures of the perceived situationally emphasized goal perspective in their training environment, goal orientations, and items assessing perceived improvement specific to tennis, satisfaction and coach ratings. The inventory took approximately 30 min to complete.

*Situational goal perspectives.* The players responded to a Spanish version (16) of the Perceived Motivational Climate in Sport Questionnaire (7, 17) specific to tennis. The instrument contained 23 items examining the degree to which the climate created by the coach was deemed to be more or less task- and ego-involving. Each item was preceded by the stem "In my training group or team ....". Mean scale scores for the task- and ego-involving climate scales were calculated.

*Goal orientations.* The Spanish version (18) of the Task and Ego Orientation in Sport Questionnaire (19) was used to assess the tennis players' dispositional proneness for task and ego involvement in their sport. In previous work, this instrument was found to exhibit acceptable factorial validity and internal reliability. When completing the Spanish version of the TEOSQ, subjects were requested to think of when they felt most successful in tennis. Mean scale scores were calculated for both the task and ego orientation scales.

*Perceived improvement, satisfaction, and coach ratings.* The tennis players' evaluation of their personal level of improvement in the technical, tactical, physical, and psychological aspects of the game and overall results was examined. The areas of improvement

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Table 1. Descriptive statistics (M, SD and range for all the variables)

	M	SD	Range
Motivational climate			
Task-involving	3.99	0.55	2.45–5
Ego-involving	2.62	0.70	1.09–5
Goal orientations			
Task orientation	4.32	0.57	2–5
Ego orientation	3.26	0.86	1–5
Perceived improvement:			
Technical	5.77	0.96	1–7
Tactical	5.37	1.00	2–7
Physical	5.50	1.23	1–7
Psychological	4.98	1.33	1–7
Satisfaction with:			
Results this year	4.45	1.57	1–7
Level of play	4.85	1.37	1–7
The coach	5.66	1.39	1–7
Coach ratings:			
Coach like I want to have	3.93	0.89	1–5
Importance of coach in training process	4.42	0.76	2–5

were evaluated on a 7-point Likert scale ranging from 1 = “I have gotten worse” to 7 = “I have gotten much better.” The athletes’ level of satisfaction with their competitive results during the current year, level of play, and degree of individualized instruction provided by their coach was indicated on a 7-point Likert scale ranging from 1 = “very dissatisfied” to 7 = “very satisfied.” In regard to the tennis players’ opinion of his/her coach, each athlete rated: a) whether his/her current coach is like the one the athlete would prefer to have (responses were provided on a 5-point Likert scale ranging from 1 = “doesn’t coincide at all with the coach I would like to have” to 7 = “is my ideal coach”) and b) the perceived importance of the coach in regard to the athlete’s learning and improvement (responses were provided on a 5-point Likert

scale ranging from 1 = “not important at all” to 5 = “extremely important”).

**Results**

The descriptive statistics for each of the variables assessed in this study are presented in Table 1. The tennis players, as a group, perceived the motivational climate on their team /in their training group to be highly task-involving. They also endorsed task-oriented goals in tennis. In general, the athletes felt that they were improving in their game, especially in regard to the technical aspects. They were satisfied with their competitive results, level of play and, in particular, the degree of individualized training provided by their coach and rated this individual in a positive manner overall.

Simple correlations (Table 2) indicated that tennis players who perceived that their coaches created a more task-involving environment also perceived they had improved in regard to the tactical, technical and psychological facets of their game. Perceptions of a task-involving environment were also significantly and positively associated with satisfaction with one’s coach, level of play and match results. On the other hand, a perceived ego-involving environment was linked to greater dissatisfaction with the coach and positively correlated to reported satisfaction with level of play (Table 2). In regard to the coach ratings, when tennis players viewed their training/team environment as more task-involving, they also perceived that their coach was like the one they would prefer to have and felt their coach played a significant role in their learning and improvement. The coach rating variables were significantly and negatively correlated with perceptions of an ego-involving climate.

Task orientation was positively correlated with reported satisfaction with the individualized teaching

Table 2. Simple correlations between perceptions of the motivational climate and goal orientations with perceived improvement, satisfaction and coach ratings

	Climate		Orientation	
	Task	Ego	Task	Ego
Perceived improvement:				
Technical	0.14*	−0.10	0.05	−0.01
Tactical	0.13*	−0.03	0.11	−0.01
Physical	0.02	0.07	0.11	0.08
Psychological	0.26***	−0.05	0.09	0.06
Satisfaction with:				
Results this year	0.23**	−0.16*	0.14*	0.00
Level of Play	0.23**	0.13*	0.12	0.03
The coach	0.41***	−0.41***	0.25***	−0.02
Coach ratings:				
Coach like I want to have	0.32***	−0.33***	0.26***	−0.05
Importance of coach in training process	0.32***	−0.35***	0.39***	0.03

\*  $P < 0.05$ ; \*\*  $P < 0.005$ ; \*\*\*  $P < 0.001$ .



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and support provided by one's coach and competitive results (Table 2). When tennis players endorsed a strong task orientation, they were also more likely to indicate that their coach is like the one they would prefer to have and is more important in terms of their development in tennis.

In order to determine whether indices of perceived individual improvement, satisfaction, and ratings of the coach were best predicted by dispositional goal orientations (i.e., task and ego orientation), perceptions of the motivational climate (i.e., perceived task-involving and ego-involving climate), or both factors, we performed a series of hierarchical stepwise regressions. In the first analysis, dispositional goal orientations (task and ego) were entered in Step 1 of the regression equation and motivational climate (task climate and ego climate) was entered in Step 2. A subsequent hierarchical stepwise procedure entered the perceived motivational climate in Step 1 and dispositional goal orientations in Step 2.

**Subjective performance**

As shown in Table 3, perceptions of the motivational climate emerged as a significant predictor of psychological improvement regardless of which step this variable was entered in the regression analysis. More specifically, perceptions of a task-involving training environment (created by the coach) corresponded to greater perceived improvement in the psychological facets of one's tennis game. The amount of variance accounted for, however, was limited (7%). Goal orientations did not emerge as significant predictors of any of the indices of subjective performance.

**Level of satisfaction**

With respect to the satisfaction variables, the perceived motivational climate emerged as the major predictor. Although the percentage of variance accounted for was low (5–6%), perceptions of a task-

Table 3. Percentage of variance accounted for in indices of perceived improvement

Step	Variable	Beta	RsquCh	RsquCu	F-value	P
<b>Technical</b>						
1	Ego orientation	–0.01				
	Task orientation	–0.07	0.00	0.00	0.12	0.88
2	Ego climate	–0.03				
	Task climate	0.18	0.02	0.02	2.50	0.08
1	Ego climate	–0.03				
	Task climate	0.18	0.02	0.02	2.28	0.10
2	Ego orientation	–0.01				
	Task orientation	–0.07	0.00	0.02	0.36	0.70
<b>Tactical</b>						
1	Ego orientation	–0.01				
	Task orientation	0.06	0.01	0.01	0.87	0.42
2	Ego climate	0.01				
	Task climate	0.07	0.00	0.01	0.36	0.69
1	Ego climate	0.01				
	Task climate	0.07	0.01	0.01	0.99	0.37
2	Ego orientation	–0.01				
	Task orientation	0.06	0.00	0.01	0.25	0.78
<b>Physical</b>						
1	Ego orientation	0.04				
	Task orientation	0.12	0.01	0.01	1.34	0.26
2	Ego climate	0.09				
	Task climate	–0.02	0.01	0.02	0.76	0.47
1	Ego climate	0.09				
	Task climate	–0.02	0.01	0.01	0.80	0.45
2	Ego orientation	0.04				
	Task orientation	0.12	0.01	0.02	1.30	0.28
<b>Psychological</b>						
1	Ego climate	0.07				
	Task orientation	–0.08	0.01	0.01	1.19	0.31
2	Ego climate	–0.00				
	Task orientation	0.30	0.07	0.08	7.24	0.001
1	Ego climate	0.00				
	Task orientation	0.30	0.07	0.07	7.77	0.001
2	Ego climate	0.07				
	Task orientation	–0.08	0.01	0.08	0.76	0.47



**Motivational climate in tennis**

Table 4. Percentage of variance accounted for the indices of satisfaction and coach ratings among tennis players

Step	Variable	Beta	RsquCh	RsquCu	F-value	P
Satisfaction with results						
1	Ego orientation	0.02				
	Task orientation	0.04	0.03	0.03	2.64	0.07
2	Ego climate	-0.13				
	Task climate	0.16	0.04	0.07	4.02	0.02
1	Ego climate	-0.13				
	Task climate	0.16	0.06	0.06	6.59	0.00
2	Ego orientation	0.02				
	Task orientation	0.04	0.00	0.06	0.20	0.82
Satisfaction with level of play						
1	Ego orientation	0.04				
	Task orientation	-0.03	0.01	0.01	1.11	0.33
2	Ego climate	-0.08				
	Task climate	0.22	0.05	0.06	4.76	0.01
1	Ego climate	-0.08				
	Task climate	0.22	0.05	0.05	5.74	0.00
2	Ego orientation	0.04				
	Task orientation	-0.03	0.00	0.05	0.21	0.81
Satisfaction with the coach						
1	Ego orientation	0.07				
	Task orientation	0.03	0.08	0.08	8.31	0.00
2	Ego climate	-0.34				
	Task climate	0.28	0.18	0.26	24.42	0.00
1	Ego climate	-0.34				
	Task climate	0.28	0.26	0.26	34.04	0.00
2	Ego orientation	0.07				
	Task orientation	0.03	0.01	0.27	0.75	0.47
Coach I prefer						
1	Ego orientation	-0.00				
	Task orientation	0.12	0.09	0.09	9.40	0.00
2	Ego climate	-0.26				
	Task climate	0.17	0.09	0.18	11.03	0.00
1	Ego climate	-0.27				
	Task climate	0.17	0.17	0.172	20.19	0.00
2	Ego orientation	-0.00				
	Task orientation	0.12	0.01	0.18	1.16	0.31
Importance of coach in training						
1	Ego orientation	0.07				
	Task orientation	0.25	0.15	0.15	17.60	0.00
2	Ego climate	-0.25				
	Task climate	0.13	0.07	0.22	8.94	0.00
1	Ego climate	-0.25				
	Task climate	0.13	0.17	0.17	20.16	0.00
2	Ego orientation	0.07				
	Task orientation	0.25	0.05	0.22	6.64	0.00

involving climate positively related to greater satisfaction with one's competitive tennis results and level of play (Table 4). An examination of the beta weight indicated that perceptions of ego climate were negatively associated with satisfaction with one's match results. In terms of the tennis players' degree of satisfaction with the degree of individualized training provided by their current coach, greater satisfaction was positively linked to perceptions of a task-involving environment and negatively related to a perceived ego-involving atmosphere ( $R^2 = .18-.26$ ).

#### Ratings of the coach

Motivational climate, mainly a perceived ego-involving environment, emerged as the primary predictor of the ratings of the coach (Table 4). The variance accounted for (17%) was considered statistically significant and meaningful (20). In relation to the conceptualization of their coach as an ideal one, tennis players revealed a greater preference for their present coach if their coach-created training environment was high in task-involving features and low in its ego-in-

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volving characteristics. Moreover, when the climate was more task-involving and less ego-involving, the athletes rated their coach as being more significant to their development in tennis (i.e., their learning and improvement). Goal orientations also emerged as a significant predictor of the players' ratings of whether their current coach is like the one they would prefer to have and the importance of the coach in regard to their tennis. In this case, task orientation was positively related to the players' evaluations of their coach.

**Discussion**

A major focus of this research was to determine whether variations in dispositional and situational goal perspectives correspond to tennis players' estimations of the growth in their game and attitudes toward their coach in a conceptually consistent manner. Perceptions of the motivational climate were primarily linked to the indices of subjective performance. However, the perceived situational goal structure emerged as a significant predictor of perceived improvement in the psychological dimension only. In particular, when the environment created by the coach was deemed more task-involving, the tennis players felt that they were progressing more in the psychological facet of their game. This result is consistent with previous work which has found an emphasis on task goals to be positively associated with the reported salience of mental skills training, the amount of practice of mental skills, and the use of mental skills to counter performance-related stress among intercollegiate athletes (21, 22).

The tennis players' reported satisfaction with their competitive results for the year and current level of play was negatively associated with a perceived ego-involving climate and, in particular, positively associated with perceptions of a task-involving atmosphere. These findings make sense if we consider the characteristics and motivational implications of an environment which is viewed as being more task-involving and less ego-involving. Such a coach-created climate should promote more task involvement among the tennis players which, in turn, means that they will be more self-referenced and mastery-focused in how they conceive their ability and judge success. As task-involved conceptions of ability and subjective success are more within the athlete's personal control, such a perspective should foster a more positive outlook on one's competitive record as well as the athlete's current performance level.

When entered first in the regression analysis, perceptions of the motivational climate accounted for a significant amount of variance in the tennis players' satisfaction with the degree of individualized instruction exhibited by their coach. More specifically, when

the environment created by the coach was deemed more task-involving and less ego-involving, the athletes were more satisfied with the amount of teaching and personalized treatment they were receiving. This result is in agreement with recent work by Balaguer et al. (23), who found that athletes felt that their coaches *engaged* in more teaching and instruction and provided greater social support when they viewed the motivational climate as promotive of task involvement. The present finding also is compatible with the work of Smith and colleagues (24, 25). They demonstrated that athletes who played for coaches who had undergone coach effectiveness training (CET) (and, thus, instructed to use more positive reinforcement, provide less punishment and do more teaching) rated their coaches as better teachers and indicated a greater desire to play for such coaches than control group athletes. Chaumeton and Duda (26) have argued that the principles of CET are endemic to a task-involving motivational climate.

In a similar vein, the perceived motivational atmosphere induced by the coach also emerged as the best predictor of the tennis players' degree of preference for their present coach. That is, when the athletes deemed the atmosphere to be more task-involving, and especially, less ego-involving, they reported that their current coach was closer to their "ideal" coach.

If entered before dispositional goal perspectives, perceptions of the motivational climate accounted for more variance in the athletes' rating of the significance of the coach to their learning and performance improvement. Once again, a more positive evaluation was tied to a perceived coach-created environment which is stronger in its task-involving features and less pronounced in its ego-involving attributes. However, dispositional goal orientations (namely, task orientation) added significant variance in the prediction of the tennis players' appraisal of the coach's importance to their progress in tennis. This finding is consonant with research by Walling and Duda (27) in the physical education (PE) context. They reported a link between task orientation and the belief that having an effective PE teacher is an important determinant of students' success.

The adopted goal perspective in achievement situations is presumed to be dependent on individual differences in proneness to task and ego involvement as well as the situational goal structure at hand. Whether the person or situational dimension is most salient depends on a number of factors, such as the contextual-specificity of the variables being predicted and age group sampled. In accordance with the suggestions of Duda and Nicholls (14) and Treasure and Roberts (15), it was hypothesized that perceptions of the motivational climate would emerge as the major predictor of the current sample of tennis players' perceived performance improvement in tennis, satisfac-



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tion with how one is doing in tennis, and contentment with and the evaluation of one's tennis coach. In general, the present findings supported this hypothesis (although limited support emerged for the indices of subjective performance). Only in the case of the athletes' rating of the relevance of the coach to the athletes' training and development did dispositional goal perspectives also emerge as a significant, albeit less important, predictor. The latter result can be explained by the observation that this particular variable seemed to encompass a belief (i.e., that a coach's contribution is pertinent to one's achievement in a sport) as well as a situation-specific evaluation (i.e., I am satisfied with my coach's influence on my tennis development). Beliefs have been found to be more closely associated with dispositional differences in goal perspectives than perceptions of the prevailing motivational atmosphere operating in one's sport (e.g., 7, 14).

The overall results concerning the superior prediction provided by perceptions of the motivational climate have important applied implications. Recent research (28) has indicated that the situationally emphasized goal structure can be modified in sport and that such interventions have a theoretically consonant effect on indices of motivation. It is reasonable to assume that it is easier to alter situational in contrast to dispositional goal perspectives. That is, we would expect that there is a need to change the former to impact the latter over time (3, 5, 9).

It should be noted, however, that perceptions of the motivational climate and goal orientations captured a limited amount of variance in facets of performance improvement ( $R^2=.01-.07$ ) and reported satisfaction with match results and personal level of play ( $R^2=.05-.06$ ). It appears that other factors, besides dispositional and situationally emphasized goal perspectives, influence subjective ratings of performance and satisfaction with competitive outcomes and one's tennis play among the present sample of athletes (e.g., the athlete's objective level of tennis talent, and the difficulty of the competition the athlete has faced).

Situationally emphasized goals were a better predictor of the three items which related to the coach ( $R^2=.17-.26$ ) than the other dependent variables examined in this study. As suggested above, we would expect a greater interdependence between athletes' perceptions of the goal perspectives manifested at the contextual level and their evaluation of the major determinant of that climate, namely the coach.

As a whole, the present findings are in accordance with the tenets of goal perspective theory (1-3) and previous sport research (5, 9, 10), and provide further support regarding the motivational advantages of a task-involving atmosphere. Some researchers have argued that the promotion of task involvement (and curtailing of ego involvement) may not be an appro-

priate strategy at the higher levels of athletic competition (11), while others, such as Pensgaard and Roberts (29) in their work involving Norwegian Olympic athletes, have noted the adaptive qualities of a task-involving climate. This study's results suggest that climates which are more task-involving and less ego-involving may be more beneficial for skilled athletes (at least in their own minds). Slightly over two-thirds of the current sample were at the advanced level of tennis proficiency or beyond. It should be noted that MANOVA revealed no differences in the variables of interest in this study as a function of competitive level. Further, the observed relationships between perceptions of the motivational climate, goal orientations, and the items assessing perceived improvement, satisfaction, and coach ratings did not significantly vary among the intermediate, advanced, and professional level tennis players.

In future research, it would be interesting to examine the predictive utility of dispositional and contextual goals to current *and* subsequent objective indices of competitive performance (11) among such skilled groups of athletes. Additionally, subsequent work might look at the capacity for perceptions of the motivational climate and goal orientations to discriminate between those younger, talented athletes who continue to participate and move up the competitive ladder and those who do not (30).

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## GENERAL MEDICAL CONDITIONS

**Exhibit 8**

# Depression in Athletes: Prevalence and Risk Factors

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**Abstract**

Depression affects an estimated 6.7% of today's adult population in a 12-month period. The prevalence rates for certain age groups, such as young adults and older adults, are higher. There are approximately 400,000 National Collegiate Athletic Association student athletes competing each year and 5 to 7 million high school student athletes involved in competitive interscholastic sports. Given such a high prevalence rate in certain age groups and a large denominator pool of athletes, past notions that athletes are devoid of mental health issues have come under scrutiny by sports medicine providers. Initial data suggest that athletes are far from immune to depression. The purpose of this article was to review the current research on athletes and depression; particularly this article will provide an overview of studies, which have investigated the rate of depression among athletes, and discuss relevant risk factors, which may contribute to depression among athletes.

**Introduction**

Depression affects an estimated 6.7% of today's adult population in a 12-month period (21). According to the U.S. Department of Health and Human Services, the prevalence rates for certain age groups, such as young adults and older adults, are higher — for example, for the 18-to-25 age group, the 12-month depression prevalence rate was 8.7% in 2008. There are approximately 400,000 National Collegiate Athletic Association (NCAA) student athletes competing each year and 5 to 7 million high school student athletes involved in competitive interscholastic sports. Given such a high prevalence rate in certain age groups and a large denominator pool of athletes in these age groups, it is reasonable to surmise that there are thousands of athletes with depression participating at the high school and college levels. Recently, sports medicine and sports psychology practitioners and researchers have turned their attention to this important issue, as past notions that athletes have reduced mental health issues due to increased levels of exercise have come under scrutiny in the popular media (24). Although vastly

understudied, initial data suggest that athletes are far from immune to depression. In fact, empirical studies indicate that athletes are just as likely to experience depression as the general population (26). The purpose of this article was to review the current research on athletes and depression and to highlight that this is an issue in much need of further study and inquiry. In particular, this article will provide an overview of studies, which have investigated the rate of depression among athletes, discuss relevant factors (*e.g.*, injury), which may contribute to depression among athletes, and consider how an integrative approach involving sports

medicine and sports psychology can best serve athletes.

**Depression Prevalence and Athletes**

To date, the majority of studies investigating the prevalence rate of depression among athletes have been conducted with college athletes. Findings from these studies suggest that the prevalence rate of depression among college athletes ranges from as low as 15.6% to as high as 21% (25,35). On the basis of these prevalence rates, as many as one in five athletes may be depressed. However, there has been a general lack of consistency thus far in the findings.

Storch et al. (29) were the first investigators to compare rates of depression symptoms between athletes and non-athletes. This study hypothesized that because athletes deal with more stress than nonathletes, they would report higher levels of alcohol use, depression symptoms, and social anxiety. The study also hypothesized that athletes would report having less social support than nonathletes. There was partial support for these hypotheses, as female athletes reported experiencing depression symptoms, social anxiety, and non-support to a greater extent than male athletes and male and female nonathletes. In another study, Yang et al. (35) demonstrated similar findings regarding gender, as female athletes reported the highest levels of depression among a sample of 257 Division I college athletes. These findings are consistent with data from the general population, which repeatedly have found women to report higher rates of

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depression than men. In total, 21% of the athletes surveyed reported symptoms of depression. Freshman athletes and those who endorsed pain reported more depression symptoms in this study.

According to Yang et al. (35), athletes in their sample experienced depression at approximately the same rate as that of a comparison group of nonathletes who participated in the study. However, Armstrong and Oomen-Early (3) found that college athletes reported lower levels of depression than those reported by nonathletes. This study used a sample consisting of 227 participants, 104 of which were male and female athletes from various sports. Overall it was found that 33.5% of the sample reported clinically significant levels of depression. The percentage of athletes endorsing clinically significant levels of depression was reported to be "significantly lower" than that of nonathletes. This study also found that athletic status was not a statistically significant predictor of depression when compared with other variables investigated in the study including gender, self-esteem levels, social connectedness, and rested sleep. Armstrong and Oomen-Early (3) contended that having a social network and team support are two factors that most strongly protect college athletes from developing depression.

Proctor and Boan-Lenzo (25) conducted another recent college athlete and depression prevalence study. This study investigated depression symptoms among a group of 61 Division I male baseball players and 51 male nonathlete college students. Proctor and Boan-Lenzo (25) found that male athletes reported fewer depression symptoms than those reported by male nonathletes. Although nonathletes reported higher levels of depression (29.4%), 15.6% of the athletes met criteria for a possible diagnosis of clinical depression.

With consideration for the mixed epidemiological data, taking a more nuanced look at the factors that may contribute to depression among athletes is particularly relevant. To date, one of the most widely studied risk factors for psychological distress among athletes has been sports injury. In a recent survey of sports medicine physicians, it was found that 80% of the time, athletes coming to treatment for an injury also discuss psychological issues related to the injury (19). However, there only have been a handful of studies, which have investigated depression symptoms directly among athletes following sports injury.

### Sports Injuries and Depression

Brewer and Petrie (7) were among the first researchers to compare depression symptoms between athletes who had and had not experienced injuries. In this retrospective study, it was found that athletes who experienced an injury during the previous year reported significantly higher depression symptom scores than those reported by noninjured athletes, as measured by the validated Center for Epidemiological Studies Depression (CES-D) scale. The sample in this study consisted of 916 NCAA Division I college football players. Brewer and Petrie (7) also found that both groups of athletes in their study reported high levels of depression symptoms, as 33% of athletes with injury and 27% of noninjured athletes could be classified as depressed on the basis of the CES-D results. In another study, Leddy et al. (16) used a prospective design to examine depression symptoms in athletes following injury. The results from this study indicated that over half of

the athletes (51%) who sustained an injury during the course of the study endorsed mild-to-severe depression symptoms, as measured by the Beck Depression Inventory (BDI). Thus far, a limitation in the research has been sole reliance on self-report measures to assess depression. However, Appaneal et al. (2) sought to address this issue by including two measures (semistructured interview and self-report) of depression in their study examining athlete's postinjury depression symptoms. In this study, the researchers used a sample of 164 athletes competing at the NCAA Division I, NCAA Division II, and high school levels. Athletes in the study were assessed using the CES-D and the semistructured interview guide for the Hamilton Rating Scale for Depression (SIGH-D). In this study, it was found that depression symptoms of athletes with injury were elevated 1 wk after injury and remained this way 1 month after injury when compared with healthy controls, as measured by the SIGH-D. No significant differences between groups were found in this study, as measured by the CES-D.

There has been a recent surge of evidence suggesting that sports concussions can lead to changes in emotional state (14,17). Furthermore there is recent evidence to suggest that sports concussions can have long-lasting emotional impact. In a recent survey of 1,044 retired National Football League (NFL) players, it was found that the 9-year risk of a depression diagnosis increased with the number of self-reported concussions (15). According to the survey, retired athletes reporting three or more concussions were three times more likely to report being diagnosed with depression when compared with athletes with no history of concussions.

Strain et al. (30) conducted a study with 26 retired NFL athletes who underwent a magnetic resonance imaging technique identified as diffusion tensor imaging scanning. They reported that certain voxels negatively correlated with BDI-II scores and that specific brain areas of the forceps minor, right frontal aslant tract, right uncinate fasciculus, and left superior longitudinal fasciculus negatively correlated ( $P < 0.01$ ) with total BDI-II scores. Fractional anisotropy maps, which reflect fiber density, axonal diameter, and myelination in white matter of the forceps minor differentiated depressed from nondepressed athletes with 100% sensitivity and 95% specificity, from which the authors conclude that diffusion tensor imaging is a promising biomarker predictor of depression symptoms. Additionally Hart et al. (13) conducted a neuroimaging study measuring cognitive impairment and depression in a sample of 34 retired NFL players and found a 23.5% prevalence of depression and a high rate of cognitive deficits compared with those of a control group. They concluded that cognitive deficits and depression symptoms appear to be more prevalent in retired NFL players when compared with those in a healthy control group.

While the relationship between concussion and depression may be significant, there is also evidence to suggest that a concussion may have the same effect as other injuries on mental health. For example, Mainwaring et al. (18) conducted a study to examine the differences between emotional responses in athletes who had a concussion compared with anterior cruciate ligament (ACL) injury. They found that athletes with ACL injuries had more severe levels of depression and longer duration of depression compared with those of athletes with concussion. The authors concluded that ACL injuries have a higher level of emotional disturbance compared with

that of athletes with concussion and that screening and intervention should be focused on athletes with ACL injuries and concussions. While the sample size of this particular study was small, it does illustrate that there is increased risk of maladaptive psychological response to various types of injuries and that concussion may or may not be an increased risk factor for depression over other types of sports-related injuries.

Although not due to the result of an acute injury, overtraining syndrome (OTS) also can threaten the overall mental and physical well-being of an athlete. OTS is characterized by psychological and physiological disturbances, along with decreases in performance (20). There is much debate about the causes and consequences of OTS, but the research does indicate that the symptoms of major depression and OTS can appear similar (23). As such, those professionals working with athletes should be mindful of not mistaking depression for OTS and *vice versa*. However, they also should be aware that the two conditions are not necessarily mutually exclusive and can co-occur.

### Career Termination

The end of an athlete's career marks a major life transition that can result in changes to an athlete's interpersonal relationships, roles, and daily routines (28). Although sports career termination represents a significant life transition for athletes, this necessarily does not mean that it results in psychological distress. For some athletes, the transition from competitive athletics to sports retirement is done with ease, allowing them to pursue new career paths and opportunities. For others, this transition is a difficult process that has been correlated with behavioral difficulties and emotional distress (21). For example, sports career termination has been associated with maladaptive coping strategies, depression, anxiety, increased hostility and anger, and substance abuse (11,28,33,34).

It is likely that several moderating and mediating variables impact an athlete's response to career termination. One particular variable that has received considerable attention is voluntary (*i.e.*, personal decision to retire) versus involuntary (*i.e.*, injury, getting cut from team) career termination. It has been hypothesized that involuntary career termination is more likely than voluntary career termination to impact an athlete's mental health negatively (9).

Wippert and Wippert (34) garnered additional support for this contention in a study that found that involuntary career termination was associated with significantly greater psychological symptoms, including depression symptomatology, as measured by the Symptom Checklist-90-R, than voluntary career termination among a sample of skiers. However, it also was found that symptoms of psychological distress for those athletes dealing with involuntary career termination decreased over time. This finding may indicate that, initially, athletes have a difficult time adjusting to involuntary career termination but experience overall reduction in psychological distress the farther removed they are from the event. Alfermann et al. (1) demonstrated similar findings in their investigation of the cognitive, behavioral, and emotional consequences associated with career termination among a sample of 256 amateur European athletes. Alfermann et al. (1) found that planned retirement from sports was associated with fewer negative emotional

reactions (including sadness) when compared with unplanned retirement.

Whereas voluntary versus involuntary career termination has been the most well-studied situational factor related to the end of athlete's career, athletic identity has received the most attention as a potential individual factor that can impact the process of transitioning out of sports. Athletic identity is defined as the degree to which an athlete defines himself or herself in terms of the athletic role (8). Baillie and Danish (4) found that athletes rating high in athletic identity were prone to experience emotional and social adjustment issues after they ended their sports career. Strong and exclusive athletic identity also has been associated with heightened stress and anxiety following sports career termination (11). Brewer (6) found that athletes scoring high on the Athletic Identity Measurement Scale responded to hypothetical career-ending injuries with depression reactions. In summary, research findings consistently suggest that individuals with a strong and exclusive athletic identity experience more intense and frequent psychological and emotional difficulties following retirement from sports (1,4,11,21).

The potential for loss of an athlete's identity following sports career termination was the primary reason, as hypothesized by a recent investigation, why former college athletes would report greater depression symptoms than current college athletes (32). However, the opposite was true, as depression was significantly higher among current athletes when compared with that among former athletes. On the basis of the results, 17% of current college athletes met the criteria for depression whereas 8% of former college athletes had levels of depression consistent with a diagnosis for the disorder. Weigand et al. (32) concluded that these findings suggest that voluntary sports career termination for the college athlete — *i.e.*, the end of their college athletic career — necessarily does not put the athlete at higher risk for the long-term development of depression. These findings may or may not be applicable to the athlete whose career is ended or interrupted by injury or who is cut from the team or sports, especially if the athlete's identity and self-worth are related intricately to continuation in sports.

### Performance and Depression

From a psychological perspective, athletes may be prone to experience depression symptoms when they face declines in their athletic performance or a catastrophic ("choking") athletic performance. Conceptually poor athletic performance may result in lack of external reinforcement, behavioral deactivation, negative self-perceptions and evaluations, and feeling of helplessness or hopelessness, which are consistent with depression symptoms. When viewed in an objective context, the nature of athletic competition can yield higher rates of loss throughout the year and ultimately only one team or athlete may achieve the pinnacle while all others end their season or career with a competitive loss. Hammond et al. (12) conducted a study to examine the relationship between the prevalence of diagnosed failure-based depression and self-reported symptoms of depression within a sample of 50 elite swimmers. Of note in this study was a 68% lifetime prevalence of depression episodes among the participants, with significantly more females endorsing history of depression. The authors found that after an athletic competition, 34% of

the athletes had clinically elevated depression scores on the BDI-II but the top quartile of elite performance had 2 times higher rate of elevated depression scores. Considering the fact that the Olympics only occur every 4 years may account for this effect, it is still important to note that within this elite performer group, there was a significant relationship between the athlete's performance and depression symptoms. This study illustrates that some high-performing athletes actually may be more susceptible to depression when faced with performance outcomes that are below expectation and that sports medicine personnel need to be aware of the psychological consequences of losing or personally failing during competition. Those providing comprehensive care for the athlete should understand that the expectations for athletic performance have a number of influences and may include not only the athlete's viewpoint but also the perception of teammates, coaches, and family.

### Concerns With Underreporting

As noted by Proctor and Boan-Lenzo (10), one reason for the difference in depression rates in their study may be because athletes were underreporting depression symptoms in an attempt to portray themselves in a favorable light. In contrast to nonathletes, athletes may have some reservations when filling out a depression measure, such as coaches discovering their scores or concerns over imagined reactions to admitting being depressed. The question of how responding impacts reporting on self-report questionnaires is always an important question for researchers and may be particularly critical in measuring depression among college athletes. Anecdotally, athletes tend to portray a picture of psychological strength when assessed for depression symptoms. There appears to be a tendency to put considerable effort into appearing "fine" or "okay" and ready for the next competition or challenge. This is inherent to the culture of athletics, as confidence often is regarded as a necessary state of mind for completion. However, it creates significant difficulty for sports medicine professionals attempting to access an athlete's state of mind accurately. Further research into depression in athletes ideally should take into account the concern for underreporting of depression symptoms, especially if the study relies on self-reported data. We currently are involved in such a study of college athletes that not only employs a validated depression survey tool but also includes an additional validated reporting tool that helps in determining whether symptoms are being underreported.

### Suicide

A number of recent suicides of current or former athletes and related media attention have resulted in heightened focus and discussion on potential risk factors for suicidal behavior in athletes. Athletes, similar to the general population, in fact do contemplate and commit suicide. In a review of the medical and periodical literature, Baum (5) found 71 cases of athletes who contemplated, attempted, or completed suicide. Of these 71 identified cases, 66 were completed suicides. The vast majority of these cases were male athletes (61 cases) with an average of 22 years old for the entire sample. This is consistent with the empirical literature, which indicates that males are more likely than females to commit suicide and that individuals between the ages of 15 and 24 years

represent the group with the highest risk of committing suicide. Although suicide in athletes continues to occur and there are aspects to athletic participation that may lead to increased rates of depression and potential suicide risk, there is paucity of research identifying risk factors for suicidal behaviors in athletes and a lack of information on guidelines to assess suicidal potential in athletes. Smith and Milliner (27) and Baum (5) report case studies of athletes who committed suicide and make inferences to the manner in which athletic trainers and other professionals may assess suicidal risk. For example, on the basis of five case studies of athletes with injury seen in their clinical practice, Smith and Milliner (27) contend that a serious injury necessitating surgery, an extended rehabilitation process (6 wk to 1 year), reduced athletic skills despite adherence to rehabilitation, a perceived lack of competence upon returning to sports when compared with preinjury levels, and being replaced by a teammate at their given position all may contribute to suicidal behavior among athletes with injury.

While the previous research and discussion are worthwhile, the small sample sizes of these studies elicit caution against making clinical decisions without more quantitative findings. Drawing from clinical practice guidelines may be the most effective manner at implementing strategies to assess and manage suicide risk with athletes. Fowler (10) completed a practice review of suicide risk assessment in clinical practice that illustrates the poor predictability of suicide and suicide attempts and the complex interactive nature of variables associated with suicide. Overall, much still remains to be understood about the identification and assessment of athletes at risk, as it relates to suicide and suicide risk reduction.

### Conclusions and Discussion

Review of the literature reveals that depression does occur in athletes and that athletes are not somehow immune or resistant to depression. In fact, it is hypothesized that there are risk factors that are more unique to an athletic population (*i.e.*, injury, involuntary career termination, performance expectations, and possibly overtraining) that may increase the risk of depression compared with the general population. In certain subpopulations of athletes, there may be a higher rate of depression than nonathletes. Clearly depression in athletes exists. Suicide in athletes, a tragic outcome that can be associated with depression, exists.

At this time, there is limited knowledge regarding optimal assessment of depression in athletes and there is paucity of evidence-based interventions that have been shown to be effective for treating athletes with clinical levels of depression. Future studies in depression and athletes should explore how assessment and management of depression may be different in athletes and nonathletes; for example, is evidenced-based therapy more or less effective in athletes or what class of medications may be more helpful to the athlete? It is hypothesized that mental health treatment services may be underutilized by individuals participating in athletics due to a myriad of variables such as time constraints and social stigma (34), which is concerning, considering the high rates of depression among athletes that have been found in some studies. Primary contact regarding depression and mental health issues may occur with sports medicine teams.



Therefore, it is essential that these health care professionals are able to identify the signs and symptoms of depression among athletes and offer appropriate referrals when necessary. Athletes may present with atypical signs and symptoms, such as anger and irritability, and engage in healthy or less healthy coping mechanisms, such as substance abuse or overtraining. Beyond the traditional indicators of depression, athletic trainers and sports medicine teams should maintain increased awareness that (given the nature of the athletic culture) athletes may be likely to deny depression symptoms. Education of sports medicine professionals and the athletic care network is key to the optimal evaluation, management, and outcome of depression in athletes.

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**Exhibit 9**

## Penn swimmer slams school's handling of Lia Thomas saga: 'They don't actually care about women at all'

By Paulina Dedaj

Published January 28, 2022

Fox News

**EXCLUSIVE:** A swimmer on the University of Pennsylvania women's team says she feels the school's decision to allow transgender swimmer Lia Thomas to compete has created an unfair balance within the sport that prioritizes Thomas' rights over that of biological female student-athletes.

The student, who spoke to Fox News Digital on the condition of anonymity out of fear of retribution, said she was "hopeful" after learning of the NCAA's decision last week to update its policy of allowing transgender athletes to compete based on hormone levels.

### LIA THOMAS' TEAMMATES REALIZING 'THEY WILL NEVER, EVER BE ABLE TO BEAT THIS PERSON,' PENN SWIMMER'S DAD SAYS

"I'm a little bit more hopeful because I think that, at least as swimmers, we kind of realize that it's not just testosterone levels," she told Fox News. "It's testosterone levels from the last 20 years and how that affected, you know, the fact that [Thomas] went through male puberty and the way that built her heart and lungs and her hands and the way she circulates blood and the lactic acid and all that stuff."

"Stuff that – it's not just the difference between two girls and how one might have slightly larger lungs and that gives them a slight advantage," she continued, "These are monumental advantages that biological males just develop through puberty, and it's not something that a year of [hormone treatments] can suppress because they still have all the muscle mass they had from the last 20 years."

The new approach to allowing transgender athletes to compete will follow a sport-by-sport model similarly adopted by the U.S. and International Olympic committees. The new NCAA policy, which takes effect starting with the 2022 NCAA Winter Championships, means swimming athletes will be governed by USA Swimming policies.



Lia Thomas, a transgender woman, warms up before swimming for the University of Pennsylvania at an Ivy League meet against Harvard University in Cambridge, Massachusetts, on Jan. 22, 2022. (JOSEPH PREZIOSO/AFP via Getty Images)

USA Swimming uses an eligibility review panel to make a decision on transgender athletes' eligibility. Elite swimmers would be up to FINA and IOC policies.

USA Swimming released a statement last week following the NCAA's announcement of its updated transgender participation policy.

The organization said it is still awaiting new directives from the International Swimming Federation (FINA) concerning trans athlete participation.

"USA Swimming firmly believes in inclusivity and the opportunity for all athletes to experience the sport of swimming in a manner that is consistent with their gender identity and expression. We also strongly believe in competitive equity, and, like many, are doing our best to learn and educate ourselves on the appropriate balance in this space," the organization said.

"In 2018, we established athlete inclusion procedures, which included both a process by which an athlete could change their competition category consistent with their gender identity and criteria for athletes qualifying for or competing in elite-level competitions (including those competition time qualifications such as Juniors, Nationals and U.S. Open), which adhered to previous International Olympic Committee guidelines. This policy also importantly provides for individual athlete consideration.

"The non-elite athlete inclusion procedures remain unchanged. Following broad transgender policy changes in Nov. 2021, the IOC now requires International Federations to create their own sport-specific eligibility requirements, and so we have been proactively working with FINA for several months to help shape and support their policy development efforts. We believe they will release a new policy shortly, which we will adopt for elite-level competitions.

"USA Swimming is a member-driven organization governed by a 15-member Board of Directors, which oversees more than 360,000 members—including coaches, volunteers and over 325,000 athletes from age-group level to the Olympic Team. These individuals and 2,800 member clubs participate through a network of 59 Local Swimming Committees (LSCs) in four geographic Zones across the U.S. With the NCAA now deferring to USA Swimming for eligibility determinations, we welcome and look forward to American NCAA athletes and coaches joining our membership in order to be eligible to be governed by our policy and its provisions and benefits."

The IOC updated its transgender participation policy in November 2021, refraining from the focus on testosterone levels to determine eligibility, according to [The Washington Post](#). The IOC urged the governing bodies of each individual sport to create the rules while offering assistance.



Lia Thomas of the Pennsylvania Quakers gets ready to compete in a freestyle event during a tri-meet against the Yale Bulldogs and the Dartmouth Big Green at Sheerr Pool on the campus of the University of Pennsylvania on Jan. 8, 2022, in Philadelphia, Pennsylvania. (Hunter Martin/Getty Images)

"Every athlete has the right to practice sport without discrimination and in a way that respects their health, safety and dignity," the updated rules stated. "At the same time the credibility of competitive sport — and particularly high-level sporting competitions — relies on a level playing field where no athlete has an unfair or disproportionate advantage over the rest."

USA Swimming didn't immediately respond to Fox News' request for comment on whether Thomas would be eligible for the NCAA Championships.

#### **LIA THOMAS CONTROVERSY LEADS WOMEN'S SPORTS ADVOCATES TO SPEAK OUT AGAINST NCAA: 'IT'S ABOUT FAIRNESS'**

The anonymous Penn swimmer also alleged that if Thomas, who is qualified to compete at the 2022 NCAA swimming and diving championships in Atlanta in March, is unable to compete under the new guidelines, a lawsuit could be filed.

"I have a feeling that if USA Swimming changes their rules, they will be filing a lawsuit for Lia to swim, but they wouldn't do that for

us," she said. "That's just really upsetting."

The student told Fox News that she does not know if the university itself or if Penn athletics would file the lawsuit but said she "heard that from some of the administrators."

The NCAA policy previously required trans women athletes to undergo at least a year of testosterone suppression treatment before competing on a women's team.

The updated policy for the NCAA says that, by March, "Transgender student-athletes will need to document sport-specific testosterone levels beginning four weeks before their sport's championship selections. Starting with the 2022-23 academic year, transgender student-athletes will need documented levels at the beginning of their season and a second documentation six months after the first. They will also need documented testosterone levels four weeks before championship selections. Full implementation would begin with the 2023-24 academic year."



Lia Thomas of the Pennsylvania Quakers after winning the 500-meter freestyle event during a tri-meet against the Yale Bulldogs and the Dartmouth Big Green at Sheerr Pool on the campus of the University of Pennsylvania on Jan. 8, 2022, in Philadelphia. (Hunter Martin/Getty Images)

"They're just proving, once again, that they don't actually care about their women athletes," the swimmer said of the University of Pennsylvania. "They say that they care and that they're here for our emotions, but why do we have to be gracious losers? ... Who are you to tell me that I shouldn't want to win because I do want to win. I'm swimming. I'm dedicating more than 20 hours a week to the sport.

"Obviously, I want to win. You can't just tell me I should be happy with second place. I'm not. And these people in Penn's administrative department who just think that women should just roll over -- it's disturbing, and it's reminiscent of the 1970s when they were fighting for Title IX and stuff like that. They don't actually care about women at all.

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"Everyone sees us and everyone stands with us. It's just a matter of trying to convince USA Swimming to do the right thing."

The student said she was initially "shocked" and "disappointed" when the team was informed that Thomas would be competing with the women's team after three years on the men's team, but she more so expressed her frustrations with the university's subsequent handling of the situation.

"Well, the administration didn't even discuss the topic with us until after Ohio (Zippy Invitational) and after we already started getting a ton of media attention. They did not address us or ask us how we were feeling. ... It was so maddening, just crazy that they didn't have the foresight to talk to us sooner."

Penn Athletics didn't immediately respond to the swimmer's remarks on the assertion of the lawsuit or comments about the treatment of female athletes.

The student said that once the issue was addressed, the administration took the approach of "We're here to support your feelings but not you."

"They are basically saying that Lia swimming is a non-negotiable," she said. "They weren't willing to actually help us, they were just



willing to brush it under the rug and be [say], 'oh, your feelings are valid.'"

The student clarified that her concern does not lie with how Thomas chooses to identify.

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"I think we all want Lia to live her best life and live as herself and do that safely and in a way that she's comfortable, but you can do that, but then you can't impede other people's lives to the point where they no longer have the rights guaranteed to them by Title IX," she said.

The bigger issue is the message she says the university is putting out.



Lia Thomas of the Pennsylvania Quakers smiles after winning the 200-meter freestyle event during a tri-meet against the Yale Bulldogs and the Dartmouth Big Green at Sheerr Pool on the campus of the University of Pennsylvania on Jan. 8, 2022 in Philadelphia, Pennsylvania. (Hunter Martin/Getty Images)

"It's really easy for the media and the administration to just focus on Lia and all the things that are hurting her and how she needs compassion right now, but I think we're the ones who truly need compassion right now, and we're the ones who are just being overlooked and told to just suck it up and deal with it and to accept second place. I think it's wrong," she said.

"When we came here, we were told we were going to have equal opportunities, and it just seems like our administrators and parts of society, very small parts, because I believe most people know it's wrong, but that those people just think that we shouldn't care about winning. And that's wrong. You know, what message are you telling little girls? You're telling them that they shouldn't strive for first place, that they should be OK with second."

UPenn will compete in its final regular-season meet Saturday at West Chester University.

The Ivy League Championships begin next month on Feb. 16-18, followed by the Eastern College Athletic Conference Championships on Feb. 24-27.

*Fox News' Ryan Gaydos and Jessica Chasmar contributed to this report.*

Paulina Dedaj is a Digital Reporter for Fox News and Fox Business. Follow Paulina Dedaj on Twitter at @PaulinaDedaj. If you've got a tip, you can email Paulina at Paulina.Dedaj@fox.com

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**17TH-PLACE FINISHER IN 500 REKA GYORGY PENS LETTER TO NCAA ON TRANSGENDER RULES****Comments: 183**

Gyorgy is a 2-time ACC Champion, 2-time NCAA All-American, and 3-time NCAA Honorable Mention All-American. Stock photo via Jack Spitser/Spitser Photography

**Exhibit 11****BY SPENCER PENLAND****183**

March 20th, 2022

College, News

**MORE NEWS**

Virginia Tech 5th year **Reka Gyorgy** has released a letter to the NCAA addressing her opinion on the organization's controversial transgender policy, which allowed Penn 5th year **Lia Thomas** to compete at the NCAA Championships last week.

Gyorgy offers a unique perspective on the situation, as she finished 17th in prelims of the 500 free last Thursday, one spot out of qualifying for finals. The 500 was, of course, the event that Thomas would go on to win with a time of 4:33.24.

Towards the beginning of her remarks, Gyorgy says "I (Reka) respect and fully stand with **Lia Thomas**; I am convinced that she is no different from me or any other D1 swimmer who has woken up at 5am her entire life for morning practice." She talks about the sacrifice she knows are associated with a commitment to swimming, such as missing vacations and holidays. "She is doing what she is passionate about and deserves that right."

Gyorgy then gets into her criticisms of the NCAA's transgender policy, stating "On the other hand, I would like to critique the NCAA rules that allow her to compete against us, who are biologically women." She talks about how she's a 5th year

**MEN'S NCAA DIVISION I  
CHAMPIONSHIPS: DAY 3 PRELIM  
LIVE RECAP**
**WORLD CHAMPION HWANG  
SUNWOO PUTS UP 48.69 100 FREE  
HEATS SWIM**
**MEN'S DIVISION I NCAA'S: DAY 3**

senior at Virginia Tech, and this was her last collegiate meet competing for the Hokies, saying she feels "frustrated." In Gyorgy's view, the current transgender athlete policies don't "promote our sport in a good way and I (Gyorgy) think it is disrespectful against the biologically female swimmers who are competing in the NCAA."

She expands the context of her complaints outside of just her finishing 17th in the 500 free last week, arguing "one spot was taken away from the girl who got 9th in the 500 free and didn't make it back to the A final preventing her from being an All-American. Every event that transgender athletes competed in was one spot taken away from biological females throughout the meet."

Gyorgy makes her most pointed criticisms at the end of her letter, saying "The NCAA knew what was coming this past week." She goes on to highlight how she feels the meet was "more about reporters, media and division," instead of the historic swims that took place, citing Kate Douglass and Gretchen Walsh's 20-point 50 frees, Katharine Berkoff's American Record 100 back, and the depth and speed of the women's 100 fly. To Gyorgy's point, there was far more mainstream media attention the meet this year than previous years, and that was transparently because of the controversy surrounding the NCAA's policy.

Gyorgy is a 2-time ACC Champion, 2-time NCAA All-American, and 3-time NCAA Honorable Mention All-American. She has requested that anyone who reports on her statement release her full remarks, so here is her full letter to the NCAA, which I (the writer of the article) urge everyone to read in its entirety:

Dear NCAA,

*I would like to address this past week's events and express my thoughts. First, I would like to remind everyone that I am a human being and that as a human being I experience feelings and emotions.*

*My name is **Reka Gyorgy** from Hungary. I am a 2016 Rio Olympian, represented Virginia Tech for the past 5 years, a 2 time ACC Champion, 2 time All-American and 3 time Honorable Mention All-American.*

*With all due respect, I would like to address something that is a problem in our sport right now and hurting athletes, especially female swimmers. Everyone has heard and known about transgender, **Lia Thomas**, and her case including all the issues and concerns that her situation brought into our sport. I'd like to point out that I respect and fully stand with **Lia Thomas**; I am convinced that she is no different than me or any other D1 swimmer who has woken up at 5am her entire life for morning practice. She has sacrificed family vacations and holidays for a competition. She has pushed herself to the limit to be the best athlete she could be. She is doing what she is passionate about and deserves that right. On the other hand, I would like to critique the NCAA rules that allow her to compete against us, who are biologically women.*

*I'm writing this letter right now in hopes that the NCAA will open their eyes and change these rules in the future. It doesn't promote our sport in a good way and I think it is disrespectful against the biologically female swimmers who are competing in the NCAA.*

*I swam the 500 free at NCAA's on March 17th, 2022 where I got 17th which means I didn't make it back to the finals and was first alternate. I'm a 5th year senior, I have*

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**FLORIDA REVEALS WHY THEY HAVE THE BEST RELAY EXCHANGES IN THE BUILDING**

**CRITERIA 2022: BENEDETTA PILATO AD 1 CENT DAL RECORD ITALIANO 100 RANA**

**CAMPIONATI SVIZZERI: NOÈ PONTI TERZO AL MONDO NEI 200 FARFALLA**

**CRITERIA 2022 SESSIONE**

been top 16 and top 8 before and I know how much of a privilege it is to make finals at a meet this big. This is my last college meet ever and I feel frustrated. It feels like that final spot was taken away from me because of the NCAA's decision to let someone who is not a biological female compete. I know you could say I had the opportunity to swim faster and make the top 16, but this situation makes it a bit different and I can't help but be angry or sad. It hurts me, my team and other women in the pool. One spot was taken away from the girl who got 9th in the 500 free and didn't make it back to the A final preventing her from being an All-American. Every event that transgender athletes competed in was one spot taken away from biological females throughout the meet.

The NCAA knew what was coming this past week. They knew opinions and minds will be divided and chose to do nothing. This week has been more about reporters, media and division in our sport than things like two women going under 21 seconds in the 50 freestyle, 3 women going under 50 seconds in the 100 butterfly and the first woman IN HISTORY to go under 48 seconds in the 100 backstroke. Thursday was not a specific athlete's fault. It is the result of the NCAA and their lack of interest in protecting their athletes. I ask that the NCAA takes time to think about all the other biological women in swimming, try to think how they would feel if they would be in our shoes. Make the right changes for our sport and for a better future in swimming.

Thank you for reading,

Reka Gyorgy, Virginia Tech swimmer

« Alex Walsh Explains How She Deals with Pressure

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183 COMMENTS



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Kris

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Peculiarly, none of those huge, record-breaking accomplishments that she mentioned were by Lia Thomas.

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HB ORG

# **WEST VIRGINIA LEGISLATURE**

## **2021 REGULAR SESSION**

### **Originating**

### **House Bill 3293**

BY DELEGATES HANNA, BRIDGES, CLARK, ELLINGTON,  
HORST, JENNINGS, LONGANACRE, MAZZOCCHI, TULLY AND  
PHILLIPS AND BURKHAMMER

[Originating in the Committee on Education; Reported  
on March 16, 2021]

HB ORG

1 A BILL to amend and reenact §18-2-5c and §18-2-25 of the Code of West Virginia, 1931, as  
 2 amended, all relating to single-sex participation in interscholastic athletic events; providing  
 3 that the birth certificate required for admission to public school confirm the pupil's sex at  
 4 time of birth, or in the alternative, that the pupil's sex be identified by a signed physician's  
 5 statement; providing that the sex identified at the time of admission must be the pupil's  
 6 sex for the purposes of single-sex participation in interscholastic athletic events under the  
 7 control, supervision, and regulation of the West Virginia Secondary Schools Activities  
 8 Commission; providing that the commission must verify with each county board that each  
 9 student participating in single-sex interscholastic events is participating according to the  
 10 student's sex at the time of the student's birth; and clarifying that these requirements do  
 11 not apply to co-educational secondary school interscholastic athletic events.

*Be it enacted by the Legislature of West Virginia:*

**§18-2-5c. Birth certificate required upon admission to public school; required notice to  
 local law-enforcement agency of missing children; identifying pupil's sex for the  
 purpose of participating in single-sex interscholastic athletic events.**

1 (a) No pupil shall be admitted for the first time to any public school in this state unless the  
 2 person enrolling the pupil presents a copy of the pupil's original birth record certified by the state  
 3 registrar of vital statistics confirming the pupil's identity, age, sex at time of birth, and state file  
 4 number of the original birth record. If a certified copy of the pupil's birth record cannot be obtained,  
 5 the person so enrolling the pupil shall submit:

6 (1) an An affidavit explaining the inability to produce a certified copy of the birth record:  
 7 *Provided*, That if any person submitting such affidavit is in U.S. military service and is in transit  
 8 due to military orders, a three-week extension shall be granted to such person for providing the  
 9 birth records; and

10 (2) A signed physician's statement indicating the pupil's sex based solely on the pupil's  
 11 unaltered internal and external reproductive anatomy.

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(b) Upon the failure of any person enrolling a pupil to furnish a certified copy of the pupil's birth record in conformance with subsection (a) above, the principal of the school in which the pupil is being enrolled or his or her designee shall immediately notify the local law-enforcement agency. The notice to the local law-enforcement agency shall include copies of the submitted proof of the pupil's identity, and age, and sex at time of birth and the affidavit explaining the inability to produce a certified copy of the birth record.

(c) Within fourteen days after enrolling a transferred pupil, the principal of the school in which the pupil has been enrolled or his or her designee shall request that the principal or his or her designee of the school in which the pupil was previously enrolled transfer a certified copy of the pupil's birth record.

(d) Principals and their designees shall be immune from any civil or criminal liability in connection with any notice to a local law-enforcement agency of a pupil lacking a birth certificate or failure to give such notice as required by this section.

(e) The sex identified in subsection (a) above shall be the pupil's sex for the purposes of participating in single-sex secondary school interscholastic athletic events under the control, supervision, and regulation of the West Virginia Secondary Schools Activities Commission pursuant to §18-2-25 of this code.

**§18-2-25. Authority of county boards to regulate athletic and other extracurricular activities of secondary schools; delegation of authority to West Virginia Secondary School Activities Commission; authority of commission; approval of rules by state board; incorporation; funds; participation by private and parochial schools, and by home-schooled students and by preparatory athletic programs; student participation in single-sex secondary school interscholastic athletic events.**

(a) The county boards of education shall exercise the control, supervision, and regulation of all interscholastic athletic events, and other extracurricular activities of the students in public



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secondary schools, and of those schools of their respective counties. The county board of education may delegate control, supervision, and regulation of interscholastic athletic events and band activities to the West Virginia Secondary School Activities Commission.

(b) The West Virginia Secondary School Activities Commission is composed of the principals, or their representatives, of those secondary schools whose county boards of education have certified in writing to the State Superintendent of Schools that they have elected to delegate the control, supervision, and regulation of their interscholastic athletic events and band activities of the students in the public secondary schools in their respective counties to the commission. The West Virginia Secondary School Activities Commission may exercise the control, supervision, and regulation of interscholastic athletic events and band activities of secondary schools, delegated to it pursuant to this section. The rules of the West Virginia Secondary School Activities Commission shall contain a provision for a proper review procedure and review board and be promulgated in accordance with the provisions of chapter 29A of this code, but shall, in all instances, be subject to the prior approval of the state board. The West Virginia Secondary School Activities Commission, may, with the consent of the State Board of Education, incorporate under the name of West Virginia Secondary School Activities Commission, Inc., as a nonprofit, nonstock corporation under the provisions of chapter 31 of this code. County boards of education may expend moneys for and pay dues to the West Virginia Secondary School Activities Commission, and all moneys paid to the commission, as well as moneys derived from any contest or other event sponsored by the commission, are quasi-public funds as defined in §18-5-1 *et seq.* of this code, and the funds of the commission are subject to an annual audit by the State Tax Commissioner.

(c) The West Virginia Secondary School Activities Commission shall promulgate reasonable rules providing for the control, supervision, and regulation of the interscholastic athletic events and other extracurricular activities of private and parochial secondary schools as

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elect to delegate to the commission control, supervision, and regulation, upon the same terms and conditions, subject to the same rules and requirements and upon the payment of the same fees and charges as those provided for public secondary schools. Any such private or parochial secondary school shall receive any monetary or other benefits in the same manner and in the same proportion as any public secondary school.

(d) Notwithstanding any other provision of this section, or the commission's rules, the commission shall consider eligible for participation in interscholastic athletic events and other extracurricular activities of secondary schools a student who is receiving home instruction pursuant to §18-8-1(c) of this code and who:

(1) Has demonstrated satisfactory evidence of academic progress for one year in compliance with the provisions of that subsection: *Provided*, That the student's average test results are within or above the fourth stanine in all subject areas;

(2) Is enrolled in at least one virtual instructional course per semester, consistent with the applicable virtual instruction policy of the county board in which the home-schooled student lives and the State Board;

(3) Has not reached the age of 19 by August 1 of the current school year;

(4) Is an amateur who receives no compensation but participates solely for the educational, physical, mental and social benefits of the activity;

(5) Agrees to comply with all disciplinary rules of the West Virginia Secondary School Activities Commission and the county board in which the home-schooled student lives; and

(6) Agrees to obey all rules of the West Virginia Secondary School Activities Commission governing awards, all-star games, parental consents, physical examinations, and vaccinations applicable to all high school athletes.

Eligibility is limited to participation in interscholastic athletic events and other extracurricular activities at the public secondary school serving the attendance zone in which the student lives: *Provided*, That home-schooled students who leave a member school during the

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school year are subject to the same transfer protocols that apply to member-to-member transfers.

Reasonable fees may be charged to the student to cover the costs of participation in interscholastic athletic events and other extracurricular activities.

(e) The West Virginia Secondary School Activities Commission shall recognize preparatory athletic programs, whose participants attend a secondary school in West Virginia for academic instruction, as nonparticipating members of the commission solely for the purpose of competing on the national level: *Provided*, That the preparatory athletic program shall pay the same fees as member schools. Such recognition does not entitle the preparatory athletic program to compete against a member school during the regular season or in any commission state championship events. The commission may promulgate an emergency rule pursuant to subsection (b) of this section, if necessary, to carry out the intent of this subsection.

(f) Prior to a student's participation in single-sex secondary school interscholastic athletic events, the West Virginia Secondary School Activities Commission must verify with each county board that each student participating in single-sex interscholastic events is participating according to the student's sex at the time of the student's birth pursuant to §18-2-5c.

This subsection does not prohibit students from participating in a co-educational secondary school interscholastic athletic events. Students may participate in a co-educational secondary school interscholastic athletic events without having to comply with the requirements of this subsection.

NOTE: The purpose of this bill is to require that a secondary student athlete's participation in single-sex athletics be based upon the athlete's biological sex, as indicated on the athlete's original birth certificate issued at the time of birth.

Strike-throughs indicate language that would be stricken from a heading or the present law and underscoring indicates new language that would be added.



IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother,  
HEATHER JACKSON

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent,  
DORA STUTLER in her official capacity as  
Harrison County Superintendent, and THE  
STATE OF WEST VIRGINIA

*Defendants*

and

LAINIEY ARMISTEAD

*Defendant-Intervenor.*

Case No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**ROGER G. BROOKS' DECLARATION IN SUPPORT OF DEFENDANT-INTERVENOR AND THE  
STATE OF WEST VIRGINIA'S MOTIONS TO EXCLUDE EXPERT TESTIMONY OF DRs. ADKINS,  
FRY, JANSSEN, AND SAFER**

I, Roger G. Brooks, declare under penalty of perjury of the laws of the United States that the following is true and correct, and state:

I am counsel of record for Defendant-Intervenor Lainiey Armistead in this litigation. The following is true of my own personal knowledge, and, if called as a witness, I would and could testify competently thereto.

As set forth below, I have reviewed the articles and studies used in support of the motions to exclude the certain proffered opinions of Dr. Adkins, Dr. Fry, Dr. Janssen, and Dr. Safer. The copies of the articles identified herein, and submitted in the accompanying Appendix to Defendant Intervenor and the State of West Virginia's Motion to Exclude Expert Testimony of Dr. Deanna Adkins ("Daubert Appendix") at

the pages indicated, are true and correct copies of those articles as obtained from public sources. I identify herein where each source was marked as an exhibit in deposition or cited in an expert's report.

1. Balaguer, I., et al., *Motivational Climate and Goal Orientations as Predictors of Perceptions of Improvement, Satisfaction and Coach Ratings Among Tennis Players*, 9 Scand. J. Med. Sci. Sports 381 (1999), doi: 10.1111/j.1600-0838.1999.tb00260.x.

This source was designated as Fry Deposition Exhibit 5 and is in the Daubert Appendix at page 370.

2. Bhargava, A., et al., *Considering Sex as a Biological Variable in Basic and Clinical Studies: An Endocrine Society Scientific Statement*, 42 Endocr. Revs. 219 (2021), doi: 10.1210/edrev/bnaa034.

This source was designated as Adkins Deposition Exhibit 4 and is in the Daubert Appendix at page 379.

3. Carmichael, P., et al., *Short-term Outcomes of Pubertal Suppression in a Selected Cohort of 12 to 15 Year Old Young People with Persistent Gender Dysphoria in the UK*, 16 PLoS ONE e0243894 (2021), <https://doi.org/10.1371/journal.pone.0243894>.

This source was designated as Janssen Deposition Exhibit 40 and is in the Daubert Appendix at page 419.

4. Clark, C.M., & Kosciw, J.G., *Engaged or Excluded: LGBTQ Youth's Participation in School Sports and Their Relationship to Psychological Well-Being*, 59 Psych. Schs. 95 (2021).

This source was cited at ¶ 52, n. 22 of Rebuttal Expert Report and Declaration of Aron Janssen, M.D. and is in the Daubert Appendix at page 445.

5. Durwood, L., et al., *Mental Health and Self-Worth in Socially Transitioned Transgender Youth*, 56 J. Am. Acad. Child Adolesc. Psychiatry 116 (2017).

This source was designated at Janssen Deposition Exhibit 9 and is in the Daubert Appendix at page 465.

6. Fin. Ministry of Soc. Affairs and Health, Council for Choices in Health Care, *Medical Treatment Methods for Dysphoria Associated with Variations in Gender Identity in Minors—Recommendation* (2020).



This source was cited at ¶ 23 of Declaration of James M. Cantor, PHD. and is in the Daubert Appendix at page 475.

7. Fin. Ministry of Soc. Affairs and Health, Council for Choices in Health Care, Medical Treatments for Gender Dysphoria that Reduces Functional Capacity in Transgender People—Recommendation (2020).

This source was cited at ¶ 23 of Declaration of James M. Cantor, PHD. and is in the Daubert Appendix at page 477.

8. Gibson, D.J., et al., *Evaluation of Anxiety and Depression in a Community Sample of Transgender Youth*, 4 JAMA Network Open e214739 (2021), doi:10.1001/jamanetworkopen.2021.4739.

This source was designated as Janssen Deposition Exhibit 17 and is in the Daubert Appendix at page 479.

9. Handelsman, D.J., et al., *Circulating Testosterone as the Hormonal Basis of Sex Differences in Athletic Performance*, 39 Endocr. Revs. 803 (2018), doi: 10.1210/er.2018-00020.

This source was designated as Safer Deposition Exhibit 4 and is in the Daubert Appendix at page 483.

10. Handelsman, D.J., *Perspective, Transgender Women Outpace Cisgender Women in Athletic Tests After 1 Year on Hormones*, Healio News: LGBTQ+ Health Updates (Dec. 16, 2020), <https://www.healio.com/news/endocrinology/20201216/transgender-women-outpace-cisgender-women-in-athletic-tests-after-1-year-on-hormones>.

This source was designated as Safer Deposition Exhibit 13 and is in the Daubert Appendix at page 510.

11. Harper, J., et al., *How does Hormone Transition in Transgender Women Change Body Composition, Muscle Strength and Haemoglobin? Systematic Review with a Focus on Implications for Sport Participation*, Br. J. Sports Med. (Mar. 1, 2021), doi: 10.1136/bjsports-2020-103106 (published online ahead of print).

This source was designated as Safer Deposition Exhibit 12 and is in the Daubert Appendix at page 514.

12. Hembree, W.C., et al., *Endocrine Treatment of Gender-Dysphoric/Gender Incongruent Persons: An Endocrine Society\* Clinical Practice Guideline*, 102 J. Clin. Endocrinol. Metab. 3869 (2017), doi: 10.1210/jc.2017-01658.

This source was designated as Adkins Deposition Exhibit 4 and Safer Deposition Exhibit 8 and is in the Daubert Appendix at page 523.

13. Hilton, E.N. & Lundberg, T.R., *Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage*, 51 Sports Med. 199 (2021), doi: 10.1007/s40279-020-01389-3.

This source was designated as Safer Deposition Exhibit 7 and is in the Daubert Appendix at page 558.

14. Lapinski, J., et al., *Best Practices in Transgender Health: A Clinician's Guide*, 45 Prim. Care Clin. Office Pract. 687 (2018) doi: 10.1016/j.pop.2018.07.007.

This source was designated as Adkins Deposition Exhibit 6 and is in the Daubert Appendix at page 574.

15. Littman, L., *Individuals Treated for Gender Dysphoria with Medical and/or Surgical Transition Who Subsequently Detransitioned: A Survey of 100 Detransitioners*, 50 Arch. Sex. Behav. 3353 (Oct. 2019), doi: 10.1007/s10508-021-02163-w.

This source was cited at ¶¶ 120, 121, 124, 125, 204 of Declaration of Stephen B. Levine, MD and is in the Daubert Appendix at page 591.

16. MacDonald, D.J., et al., *The Role of Enjoyment and Motivational Climate in Relation to the Personal Development of Team Sport Athletes*, 25 Sport Psych. 32 (2011).

This source was cited in the bibliography of Expert Report and Declaration of Professor Mary D. Fry, PHD and is in the Daubert Appendix at page 608.

17. Nainggolan, L., *Hormonal Tx of Youth with Gender Dysphoria Stops in Sweden*, Medscape (May 21, 2021), <https://www.medscape.com/viewarticle/950964>.

This source was designated as Janssen Deposition Exhibit 12 and is in the Daubert Appendix at page 624.

18. National Institutes of Health, Office of Research on Women's Health, *How Sex and Gender Influence Health and Disease*, [https://orwh.od.nih.gov/sites/orwh/files/docs/SexGenderInfographic\\_11x17\\_508.pdf](https://orwh.od.nih.gov/sites/orwh/files/docs/SexGenderInfographic_11x17_508.pdf). (last visited May 10, 2022).

This source was designated as Adkins Deposition Exhibit 8 and is in the Daubert Appendix at page 627.

19. Newton, M., et al., *Psychometric Properties of the Caring Climate Scale in a Physical Activity Setting*, 16 Revista de Psicología del Deporte 67 (2007), <https://www.redalyc.org/articulo.oa?id=235119232005>.

This source was designated as Fry Deposition Exhibit 5 and is in the Daubert Appendix at page 628.

20. Olson, K.R., et al., *Mental Health of Transgender Children who are Supported in Their Identities*, 137 Pediatrics e20153223 (2015), doi: 10.1542/peds.2015-3223.

This source was cited at ¶ 35, n. 9 of Rebuttal Expert Report and Declaration of Aron Janssen, M.D. and is in the Daubert Appendix at page 647.

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**DECLARATION UNDER PENALTY OF PERJURY**

I, Roger G. Brooks, a citizen of the United States and a resident of the State of North Carolina, hereby declare under penalty of perjury pursuant to 28 U.S.C. § 1746 that the foregoing is true and correct to the best of my knowledge.

Executed this 12th day of May, 2022, at Durham, North Carolina.

/s/ Roger G. Brooks  
Roger G. Brooks

**APPENDIX TO DEFENDANT-INTERVENOR AND  
THE STATE OF WEST VIRGINIA'S MOTIONS TO  
EXCLUDE EXPERT TESTIMONY OF DRS.  
ADKINS, FRY, JANSSEN, AND SAFER**



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## REVIEW ARTICLE



# Transgender Women in the Female Category of Sport: Perspectives on Testosterone Suppression and Performance Advantage

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## Abstract

Males enjoy physical performance advantages over females within competitive sport. The sex-based segregation into male and female sporting categories does not account for transgender persons who experience incongruence between their biological sex and their experienced gender identity. Accordingly, the International Olympic Committee (IOC) determined criteria by which a transgender woman may be eligible to compete in the female category, requiring total serum testosterone levels to be suppressed below 10 nmol/L for at least 12 months prior to and during competition. Whether this regulation removes the male performance advantage has not been scrutinized. Here, we review how differences in biological characteristics between biological males and females affect sporting performance and assess whether evidence exists to support the assumption that testosterone suppression in transgender women removes the male performance advantage and thus delivers fair and safe competition. We report that the performance gap between males and females becomes significant at puberty and often amounts to 10–50% depending on sport. The performance gap is more pronounced in sporting activities relying on muscle mass and explosive strength, particularly in the upper body. Longitudinal studies examining the effects of testosterone suppression on muscle mass and strength in transgender women consistently show very modest changes, where the loss of lean body mass, muscle area and strength typically amounts to approximately 5% after 12 months of treatment. Thus, the muscular advantage enjoyed by transgender women is only minimally reduced when testosterone is suppressed. Sports organizations should consider this evidence when reassessing current policies regarding participation of transgender women in the female category of sport.

## Key Points

Given that biological males experience a substantial performance advantage over females in most sports, there is currently a debate whether inclusion of transgender women in the female category of sports would compromise the objective of fair and safe competition.

Here, we report that current evidence shows the biological advantage, most notably in terms of muscle mass and strength, conferred by male puberty and thus enjoyed by most transgender women is only minimally reduced when testosterone is suppressed as per current sporting guidelines for transgender athletes.

This evidence is relevant for policies regarding participation of transgender women in the female category of sport.

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## 1 Introduction

Sporting performance is strongly influenced by a range of physiological factors, including muscle force and power-producing capacity, anthropometric characteristics, cardiorespiratory capacity and metabolic factors [1, 2]. Many of these physiological factors differ significantly between biological males and females as a result of genetic differences and androgen-directed development of secondary sex characteristics [3, 4]. This confers large sporting performance advantages on biological males over females [5].

When comparing athletes who compete directly against one another, such as elite or comparable levels of school-aged athletes, the physiological advantages conferred by biological sex appear, on assessment of performance data, insurmountable. Further, in sports where contact, collision or combat are important for gameplay, widely different physiological attributes may create safety and athlete welfare concerns, necessitating not only segregation of sport into male and female categories, but also, for example, into weight and age classes. Thus, to ensure that both men and women can enjoy sport in terms of fairness, safety and inclusivity, most sports are divided, in the first instance, into male and female categories.

Segregating sports by biological sex does not account for transgender persons who experience incongruence between their biological sex and their experienced gender identity, and whose legal sex may be different to that recorded at birth [6, 7]. More specifically, transgender women (observed at birth as biologically male but identifying as women) may, before or after cross-hormone treatment, wish to compete in the female category. This has raised concerns about fairness and safety within female competition, and the issue of how to fairly and safely accommodate transgender persons in sport has been subject to much discussion [6–13].

The current International Olympic Committee (IOC) policy [14] on transgender athletes states that “it is necessary to ensure insofar as possible that trans athletes are not excluded from the opportunity to participate in sporting competition”. Yet the policy also states that “the overriding sporting objective is and remains the guarantee of fair competition”. As these goals may be seen as conflicting if male performance advantages are carried through to competition in the female category, the IOC concludes that “restrictions on participation are appropriate to the extent that they are necessary and proportionate to the achievement of that objective”.

Accordingly, the IOC determined criteria by which transgender women may be eligible to compete in the female category. These include a solemn declaration that her gender identity is female and the maintenance of total

serum testosterone levels below 10 nmol/L for at least 12 months prior to competing and during competition [14]. Whilst the scientific basis for this testosterone threshold was not openly communicated by the IOC, it is surmised that the IOC believed this testosterone criterion sufficient to reduce the sporting advantages of biological males over females and deliver fair and safe competition within the female category.

Several studies have examined the effects of testosterone suppression on the changing biology, physiology and performance markers of transgender women. In this review, we aim to assess whether evidence exists to support the assumption that testosterone suppression in transgender women removes these advantages. To achieve this aim, we first review the differences in biological characteristics between biological males and females, and examine how those differences affect sporting performance. We then evaluate the studies that have measured elements of performance and physical capacity following testosterone suppression in untrained transgender women, and discuss the relevance of these findings to the supposition of fairness and safety (i.e. removal of the male performance advantage) as per current sporting guidelines.

## 2 The Biological Basis for Sporting Performance Advantages in Males

The physical divergence between males and females begins during early embryogenesis, when bipotential gonads are triggered to differentiate into testes or ovaries, the tissues that will produce sperm in males and ova in females, respectively [15]. Gonad differentiation into testes or ovaries determines, via the specific hormone milieu each generates, downstream in utero reproductive anatomy development [16], producing male or female body plans. We note that in rare instances, differences in sex development (DSDs) occur and the typical progression of male or female development is disrupted [17]. The categorisation of such athletes is beyond the scope of this review, and the impact of individual DSDs on sporting performance must be considered on their own merits.

In early childhood, prior to puberty, sporting participation prioritises team play and the development of fundamental motor and social skills, and is sometimes mixed sex. Athletic performance differences between males and females prior to puberty are often considered inconsequential or relatively small [18]. Nonetheless, pre-puberty performance differences are not unequivocally negligible, and could be mediated, to some extent, by genetic factors and/or activation of the hypothalamic–pituitary–gonadal axis during the neonatal period, sometimes referred to as “minipuberty”. For example, some 6500 genes are differentially expressed between males and females [19] with an estimated 3000 sex-specific



differences in skeletal muscle likely to influence composition and function beyond the effects of androgenisation [3], while increased testosterone during minipuberty in males aged 1–6 months may be correlated with higher growth velocity and an “imprinting effect” on BMI and bodyweight [20, 21]. An extensive review of fitness data from over 85,000 Australian children aged 9–17 years old showed that, compared with 9-year-old females, 9-year-old males were faster over short sprints (9.8%) and 1 mile (16.6%), could jump 9.5% further from a standing start (a test of explosive power), could complete 33% more push-ups in 30 s and had 13.8% stronger grip [22]. Male advantage of a similar magnitude was detected in a study of Greek children, where, compared with 6-year-old females, 6-year-old males completed 16.6% more shuttle runs in a given time and could jump 9.7% further from a standing position [23]. In terms of aerobic capacity, 6- to 7-year-old males have been shown to have a higher absolute and relative (to body mass)  $\text{VO}_{2\text{max}}$  than 6- to 7-year-old females [24]. Nonetheless, while some biological sex differences, probably genetic in origin, are measurable and affect performance pre-puberty, we consider the effect of androgenizing puberty more influential on performance, and have focused our analysis on musculoskeletal differences hereafter.

Secondary sex characteristics that develop during puberty have evolved under sexual selection pressures to improve reproductive fitness and thus generate anatomical divergence beyond the reproductive system, leading to adult body types that are measurably different between sexes. This phenomenon is known as sex dimorphism. During puberty, testosterone levels increase 20-fold in males, but remain low in females, resulting in circulating testosterone concentrations at least 15 times higher in males than in females of any age [4, 25]. Testosterone in males induces changes in muscle mass, strength, anthropometric variables and hemoglobin levels [4], as part of the range of sexually dimorphic characteristics observed in humans.

Broadly, males are bigger and stronger than females. It follows that, within competitive sport, males enjoy significant performance advantages over females, predicated on the superior physical capacity developed during puberty in response to testosterone. Thus, the biological effects of elevated pubertal testosterone are primarily responsible for driving the divergence of athletic performances between males and females [4]. It is acknowledged that this divergence has been compounded historically by a lag in the cultural acceptance of, and financial provision for, females in sport that may have had implications for the rate of improvement in athletic performance in females. Yet, since the 1990s, the difference in performance records between males and females has been relatively stable, suggesting that biological differences created by androgenization explain most of the male advantage, and are insurmountable [5, 26, 27].

Table 1 outlines physical attributes that are major parameters underpinning the male performance advantage [28–38]. Males have: larger and denser muscle mass, and stiffer connective tissue, with associated capacity to exert greater muscular force more rapidly and efficiently; reduced fat mass, and different distribution of body fat and lean muscle mass, which increases power to weight ratios and upper to lower limb strength in sports where this may be a crucial determinant of success; longer and larger skeletal structure, which creates advantages in sports where levers influence force application, where longer limb/digit length is favorable, and where height, mass and proportions are directly responsible for performance capacity; superior cardiovascular and respiratory function, with larger blood and heart volumes, higher hemoglobin concentration, greater cross-sectional area of the trachea and lower oxygen cost of respiration [3, 4, 39, 40]. Of course, different sports select for different physiological characteristics—an advantage in one discipline may be neutral or even a disadvantage in another—but examination of a variety of record and performance metrics in any discipline reveals there are few sporting disciplines where males do not possess performance advantage over females as a result of the physiological characteristics affected by testosterone.

### 3 Sports Performance Differences Between Males and Females

#### 3.1 An Overview of Elite Adult Athletes

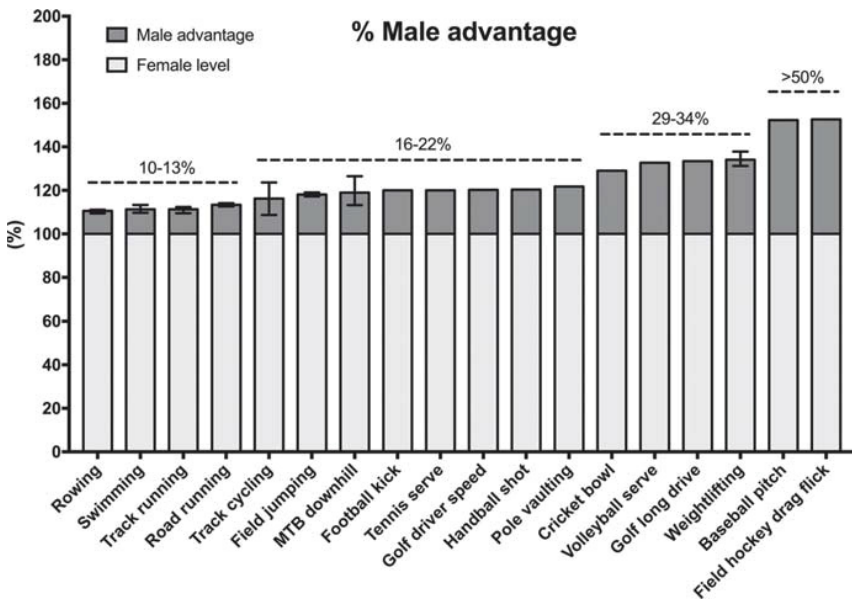
A comparison of adult elite male and female achievements in sporting activities can quantify the extent of the male performance advantage. We searched publicly available sports federation databases and/or tournament/competition records to identify sporting metrics in various events and disciplines, and calculated the performance of males relative to females. Although not an exhaustive list, examples of performance gaps in a range of sports with various durations, physiological performance determinants, skill components and force requirements are shown in Fig. 1.

The smallest performance gaps were seen in rowing, swimming and running (11–13%), with low variation across individual events within each of those categories. The performance gap increases to an average of 16% in track cycling, with higher variation across events (from 9% in the 4000 m team pursuit to 24% in the flying 500 m time trial). The average performance gap is 18% in jumping events (long jump, high jump and triple jump). Performance differences larger than 20% are generally present when considering sports and activities that involve extensive upper body contributions. The gap between fastest recorded tennis serve

**Table 1** Selected physical difference between untrained/moderately trained males and females. Female levels are set as the reference value

Variable	Magnitude of sex difference (%)	References
Body composition		
Lean body mass	45	Lee et al. [28]
Fat%	− 30	
Muscle mass		
Lower body	33	Janssen et al. [29]
Upper body	40	
Muscle strength		
Grip strength	57	Bohannon et al. [30]
Knee extension peak torque	54	Neder et al. [31]
Anthropometry and bone geometry		
Femur length	9.4	Jantz et al. [32]
Humerus length	12.0	Brinckmann et al. [33]
Radius length	14.6	
Pelvic width relative to pelvis height	− 6.1	
Tendon properties		
Force	83	Lepley et al. [34]
Stiffness	41	
VO <sub>2max</sub>		
Absolute values	50	Pate et al. [35]
Relative values	25	
Respiratory function		
Pulmonary ventilation (maximal)	48	Åstrand et al. [36]
Cardiovascular function		
Left ventricular mass	31	Åstrand et al. [36]
Cardiac output (rest)	22	Best et al. [37]
Cardiac output (maximal)	30	Tong et al. [38]
Stroke volume (rest)	43	
Stroke volume (maximal)	34	
Hemoglobin concentration	11	

**Fig. 1** The male performance advantage over females across various selected sporting disciplines. The female level is set to 100%. In sport events with multiple disciplines, the male value has been averaged across disciplines, and the error bars represent the range of the advantage. The metrics were compiled from publicly available sports federation databases and/or tournament/competition records. MTB mountain bike





is 20%, while the gaps between fastest recorded baseball pitches and field hockey drag flicks exceed 50%.

Sports performance relies to some degree on the magnitude, speed and repeatability of force application, and, with respect to the speed of force production (power), vertical jump performance is on average 33% greater in elite men than women, with differences ranging from 27.8% for endurance sports to in excess of 40% for precision and combat sports [41]. Because implement mass differs, direct comparisons are not possible in throwing events in track and field athletics. However, the performance gap is known to be substantial, and throwing represents the widest sex difference in motor performance from an early age [42]. In Olympic javelin throwers, this is manifested in differences in the peak linear velocities of the shoulder, wrist, elbow and hand, all of which are 13–21% higher for male athletes compared with females [43].

The increasing performance gap between males and females as upper body strength becomes more critical for performance is likely explained to a large extent by the observation that males have disproportionately greater strength in their upper compared to lower body, while females show the inverse [44, 45]. This different distribution of strength compounds the general advantage of increased muscle mass in upper body dominant disciplines. Males also have longer arms than females, which allows greater torque production from the arm lever when, for example, throwing a ball, punching or pushing.

3.2 Olympic Weightlifting

In Olympic weightlifting, where weight categories differ between males and females, the performance gap is between 31 and 37% across the range of competitive body weights between 1998 and 2020 (Fig. 1). It is important to note that at all weight categories below the top/open category, performances are produced within weight categories

with an upper limit, where strength can be correlated with “fighting weight”, and we focused our analysis of performance gaps in these categories.

To explore strength–mass relationships further, we compared Olympic weightlifting data between equivalent weight categories which, to some extent, limit athlete height, to examine the hypothesis that male performance advantage may be largely (or even wholly) mediated by increased height and lever-derived advantages (Table 2). Between 1998 and 2018, a 69 kg category was common to both males and females, with the male record holder (69 kg, 1.68 m) lifting a combined weight 30.1% heavier than the female record holder (69 kg, 1.64 m). Weight category changes in 2019 removed the common 69 kg category and created a common 55 kg category. The current male record holder (55 kg, 1.52 m) lifts 29.5% heavier than the female record holder (55 kg, 1.52 m). These comparisons demonstrate that males are approximately 30% stronger than females of equivalent stature and mass. However, importantly, male vs. female weightlifting performance gaps increase with increasing bodyweight. For example, in the top/open weight category of Olympic weightlifting, in the absence of weight (and associated height) limits, maximum male lifting strength exceeds female lifting strength by nearly 40%. This is further manifested in powerlifting, where the male record (total of squat, bench press and deadlift) is 65% higher than the female record in the open weight category of the World Open Classic Records. Further analysis of Olympic weightlifting data shows that the 55-kg male record holder is 6.5% stronger than the 69-kg female record holder (294 kg vs 276 kg), and that the 69-kg male record is 3.2% higher than the record held in the female open category by a 108-kg female (359 kg vs 348 kg). This Olympic weightlifting analysis reveals key differences between male and female strength capacity. It shows that, even after adjustment for mass, biological males are significantly stronger (30%) than females, and

Table 2 Olympic weightlifting data between equivalent male–female and top/open weight categories

	Sex	Weight (kg)	Height (m)	Combined record (kg)	Strength to weight ratio	Relative performance (%)
2019 record in the 55 kg weight-limited category						
Liao Qiuyun	F	55	1.52	227	4.13	
Om Yun-chol	M	55	1.52	294	5.35	29.5
1998–2018 record in the 69-kg weight-limited category						
Oksana Slivenko	F	69	1.64	276	4.00	
Liao Hui	M	69	1.68	359	5.20	30.1
Comparative performances for top/open categories (all time heaviest combined lifts)						
Tatiana Kashirina	F	108	1.77	348	3.22	
Lasha Talakhadze	M	168	1.97	484	2.88	39.1

F female, M male

that females who are 60% heavier than males do not overcome these strength deficits.

3.3 Perspectives on Elite Athlete Performance Differences

Figure 1 illustrates the performance gap between adult elite males and adult elite females across various sporting disciplines and activities. The translation of these advantages, assessed as the performance difference between the very best males and very best females, are significant when extended and applied to larger populations. In running events, for example, where the male–female gap is approximately 11%, it follows that many thousands of males are faster than the very best females. For example, approximately 10,000 males have personal best times that are faster than the current Olympic 100 m female champion (World Athletics, personal communication, July 2019). This has also been described elsewhere [46, 47], and illustrates the true effect of an 11% typical difference on population comparisons between males and females. This is further apparent upon examination of selected junior male records, which surpass adult elite female performances by the age of 14–15 years (Table 3), demonstrating superior male athletic performance over elite females within a few years of the onset of puberty.

These data overwhelmingly confirm that testosterone-driven puberty, as the driving force of development of male secondary sex characteristics, underpins sporting advantages that are so large no female could reasonably hope to succeed without sex segregation in most sporting competitions. To ensure, in light of these analyses, that female athletes can be included in sporting competitions in a fair and safe manner, most sports have a female category the purpose of which is the protection of both fairness and, in some sports, safety/welfare of athletes who do not benefit from the physiological changes induced by male levels of testosterone from puberty onwards.

Table 3 Selected junior male records in comparison with adult elite female records

Event	Schoolboy male record	Elite female (adult) record
100 m	10.20 (age 15)	10.49
800 m	1:51.23 (age 14)	1:53.28
1500 m	3:48.37 (age 14)	3:50.07
Long jump	7.85 m (age 15)	7.52 m
Discus throw	77.68 m (age 15)	76.80 m

M meters

Time format: minutes:seconds.hundredths of a second

3.4 Performance Differences in Non-elite Individuals

The male performance advantages described above in athletic cohorts are similar in magnitude in untrained people. Even when expressed relative to fat-free weight,  $VO_{2max}$  is 12–15% higher in males than in females [48]. Records of lower-limb muscle strength reveal a consistent 50% difference in peak torque between males and females across the lifespan [31]. Hubal et al. [49] tested 342 women and 243 men for isometric (maximal voluntary contraction) and dynamic strength (one-repetition maximum; 1RM) of the elbow flexor muscles and performed magnetic resonance imaging (MRI) of the biceps brachii to determine cross-sectional area. The males had 57% greater muscle size, 109% greater isometric strength, and 89% greater 1RM strength than age-matched females. This reinforces the finding in athletic cohorts that sex differences in muscle size and strength are more pronounced in the upper body.

Recently, sexual dimorphism in arm force and power was investigated in a punch motion in moderately-trained individuals [50]. The power produced during a punch was 162% greater in males than in females, and the least powerful man produced more power than the most powerful woman. This highlights that sex differences in parameters such as mass, strength and speed may combine to produce even larger sex differences in sport-specific actions, which often are a product of how various physical capacities combine. For example, power production is the product of force and velocity, and momentum is defined as mass multiplied by velocity. The momentum and kinetic energy that can be transferred to another object, such as during a tackle or punch in collision and combat sports are, therefore, dictated by: the mass; force to accelerate that mass, and; resultant velocity attained by that mass. As there is a male advantage for each of these factors, the net result is likely synergistic in a sport-specific action, such as a tackle or a throw, that widely surpasses the sum of individual magnitudes of advantage in isolated fitness variables. Indeed, already at 17 years of age, the average male throws a ball further than 99% of 17-year-old females [51], despite no single variable (arm length, muscle mass etc.) reaching this numerical advantage. Similarly, punch power is 162% greater in men than women even though no single parameter that produces punching actions achieves this magnitude of difference [50].

#### 4 Is the Male Performance Advantage Lost when Testosterone is Suppressed in Transgender Women?

The current IOC criteria for inclusion of transgender women in female sports categories require testosterone suppression below 10 nmol/L for 12 months prior to and during competition. Given the IOC's stated position that the "overriding sporting objective is and remains the guarantee of fair competition" [14], it is reasonable to assume that the rationale for this requirement is that it reduces the male performance advantages described previously to an acceptable degree, thus permitting fair and safe competition. To determine whether this medical intervention is sufficient to remove (or reduce) the male performance advantage, which we described above, we performed a systematic search of the scientific literature addressing anthropometric and muscle characteristics of transgender women. Search terms and filtering of peer-reviewed data are given in Supplementary Table S1.

##### 4.1 Anthropometrics

Given its importance for the general health of the transgender population, there are multiple studies of bone health, and reviews of these data. To summarise, transgender women often have low baseline (pre-intervention) bone mineral density (BMD), attributed to low levels of physical activity, especially weight-bearing exercise, and low vitamin D levels [52, 53]. However, transgender women generally maintain bone mass over the course of at least 24 months of testosterone suppression. There may even be small but significant increases in BMD at the lumbar spine [54, 55]. Some retrieved studies present data pertaining to maintained BMD in transgender women after many years of testosterone suppression. One such study concluded that "BMD is preserved over a median of 12.5 years" [56]. In support, no increase in fracture rates was observed over 12 months of testosterone suppression [54]. Current advice, including that from the International Society for Clinical Densitometry, is that transgender women, in the absence of other risk factors, do not require monitoring of BMD [52, 57]. This is explicable under current standard treatment regimes, given the established positive effect of estrogen, rather than testosterone, on bone turnover in males [58].

Given the maintenance of BMD and the lack of a plausible biological mechanism by which testosterone suppression might affect skeletal measurements such as bone length and hip width, we conclude that height and skeletal parameters remain unaltered in transgender women, and

that sporting advantage conferred by skeletal size and bone density would be retained despite testosterone reductions compliant with the IOC's current guidelines. This is of particular relevance to sports where height, limb length and handspan are key (e.g. basketball, volleyball, handball) and where high movement efficiency is advantageous. Male bone geometry and density may also provide protection against some sport-related injuries—for example, males have a lower incidence of knee injuries, often attributed to low quadriceps (*Q*) angle conferred by a narrow pelvic girdle [59, 60].

##### 4.2 Muscle and Strength Metrics

As discussed earlier, muscle mass and strength are key parameters underpinning male performance advantages. Strength differences range between 30 and 100%, depending upon the cohort studied and the task used to assess strength. Thus, given the important contribution made by strength to performance, we sought studies that have assessed strength and muscle/lean body mass changes in transgender women after testosterone reduction. Studies retrieved in our literature search covered both longitudinal and cross-sectional analyses. Given the superior power of the former study type, we will focus on these.

The pioneer work by Gooren and colleagues, published in part in 1999 [61] and in full in 2004 [62], reported the effects of 1 and 3 years of testosterone suppression and estrogen supplementation in 19 transgender women (age 18–37 years). After the first year of therapy, testosterone levels were reduced to 1 nmol/L, well within typical female reference ranges, and remained low throughout the study course. As determined by MRI, thigh muscle area had decreased by –9% from baseline measurement. After 3 years, thigh muscle area had decreased by a further –3% from baseline measurement (total loss of –12% over 3 years of treatment). However, when compared with the baseline measurement of thigh muscle area in transgender men (who are born female and experience female puberty), transgender women retained significantly higher thigh muscle size. The final thigh muscle area, after three years of testosterone suppression, was 13% larger in transwomen than in the transmen at baseline ( $p < 0.05$ ). The authors concluded that testosterone suppression in transgender women does not reverse muscle size to female levels.

Including Gooren and Bunck [62], 12 longitudinal studies [53, 63–73] have examined the effects of testosterone suppression on lean body mass or muscle size in transgender women. The collective evidence from these studies suggests that 12 months, which is the most commonly examined intervention period, of testosterone suppression to female-typical reference levels results in a modest (approximately –5%) loss of lean body mass or muscle size (Table 4). No

**Table 4** Longitudinal studies of muscle and strength changes in adult transgender women undergoing cross-sex hormone therapy

Study	Participants (age)	Therapy	Confirmed serum testosterone levels	Muscle/strength data	Comparison with reference females
Polderman et al. [73]	<i>N</i> = 12 TW 18–36 yr (age range)	T suppression + E supplementation	< 2 nmol/L at 4 mo	<i>LBM</i> 4 mo – 2.2%	<i>LBM</i> 4 mo 16%
Gooren and Bunck [62]	<i>N</i> = 19 TW 26 ± 6 yr	T suppression + E supplementation	≤ 1 nmol/L at 1 and 3 yr	<i>Thigh area</i> 1 yr – 9% / 3 yr – 12%	<i>Thigh area</i> 1 yr 16%/3 yr 13%
Haraldsen et al. [63]	<i>N</i> = 12 TW 29 ± 8 yr	E supplementation	< 10 nmol/L at 3 mo and 1 yr	<i>LBM</i> 3 mo/1 yr—small changes, unclear magnitude	
Mueller et al. [64]	<i>N</i> = 84 TW 36 ± 11 yr	T suppression + E supplementation	≤ 1 nmol/L at 1 and 2 yr	<i>LBM</i> 1 yr – 4%/2 yr – 7%	
Wierckx et al. [65]	<i>N</i> = 53 TW 31 ± 14 yr	T suppression + E supplementation	< 10 nmol/L at 1 yr	<i>LBM</i> 1 yr – 5%	<i>LBM</i> 1 yr 39%
Van Caenegem et al. [53] (and Van Caenegem et al. [76])	<i>N</i> = 49 TW 33 ± 14 yr	T suppression + E supplementation	≤ 1 nmol/L at 1 and 2 yr	<i>LBM</i> 1 yr – 4%/2 yr – 0.5% <i>Grip strength</i> 1 yr – 7%/2 yr – 9% <i>Calf area</i> 1 yr – 2%/2 yr – 4% <i>Forearm area</i> 1 yr – 8%/2 yr – 4%	<i>LBM</i> 1 yr 24%/2 yr 28% <i>Grip strength</i> 1 yr 26%/2 yr 23% <i>Calf area</i> 1 yr 16%/2 yr 13% <i>Forearm area</i> 1 yr 29%/2 yr 34%
Gava et al. [66]	<i>N</i> = 40 TW 31 ± 10 yr	T suppression + E supplementation	< 5 nmol/L at 6 mo and ≤ 1 nmol/L at 1 yr	<i>LBM</i> 1 yr – 2%	
Auer et al. [67]	<i>N</i> = 45 TW 35 ± 1 (SE) yr	T suppression + E supplementation	< 5 nmol/L at 1 yr	<i>LBM</i> 1 yr – 3%	<i>LBM</i> 1 yr 27%
Klaver et al. [68]	<i>N</i> = 179 TW 29 (range 18–66)	T suppression + E supplementation	≤ 1 nmol/L at 1 yr	<i>LBM</i> 1 yr Total – 3% Arm region – 6% Trunk region – 2% Android region 0% Gynoid region – 3% Leg region – 4%	<i>LBM</i> 1 yr Total 18% Arm region 28% Leg region 19%
Figuera et al. [69]	<i>N</i> = 46 TW 34 ± 10	E supplementation with or without T suppression	< 5 nmol/L at 3 mo ≤ 1 nmol/L at 31 mo	<i>ALM</i> 31 mo – 4% from the 3 mo visit	
Scharff et al. [70]	<i>N</i> = 249 TW 28 (inter quartile range 23–40)	T suppression + E supplementation	≤ 1 nmol/L at 1 yr	<i>Grip strength</i> 1 yr – 4%	<i>Grip strength</i> 1 yr 21%
Wiik et al. [71]	<i>N</i> = 11 TW 27 ± 4	T suppression + E supplementation	≤ 1 nmol/L at 4 mo and at 1 yr	<i>Thigh volume</i> 1 yr – 5% <i>Quad area</i> 1 yr – 4% <i>Knee extension strength</i> 1 yr 2% <i>Knee flexion strength</i> 1 yr 3%	<i>Thigh volume</i> 1 yr 33% <i>Quad area</i> 26% <i>Knee extension strength</i> 41% <i>Knee flexion strength</i> 33%

Studies reporting measures of lean mass, muscle volume, muscle area or strength are included. Muscle/strength data are calculated in reference to baseline cohort data and, where reported, reference female (or transgender men before treatment) cohort data. Tack et al. [72] was not included in the table since some of the participants had not completed full puberty at treatment initiation. van Caenegem et al. [76] reports reference female values measured in a separately-published, parallel cohort of transgender men

*N* number of participants, *TW* transgender women, *Yr* year, *Mo* month, *T* testosterone, *E* estrogen. ± Standard deviation (unless otherwise indicated in text), *LBM* lean body mass, *ALM* appendicular lean mass

study has reported muscle loss exceeding the  $-12\%$  found by Gooren and Bunck after 3 years of therapy. Notably, studies have found very consistent changes in lean body mass (using dual-energy X-ray absorptiometry) after 12 months of treatment, where the change has always been between  $-3$  and  $-5\%$  on average, with slightly greater reductions in the arm compared with the leg region [68]. Thus, given the large baseline differences in muscle mass between males and females (Table 1; approximately 40%), the reduction achieved by 12 months of testosterone suppression can reasonably be assessed as small relative to the initial superior mass. We, therefore, conclude that the muscle mass advantage males possess over females, and the performance implications thereof, are not removed by the currently studied durations (4 months, 1, 2 and 3 years) of testosterone suppression in transgender women. In sports where muscle mass is important for performance, inclusion is therefore only possible if a large imbalance in fairness, and potentially safety in some sports, is to be tolerated.

To provide more detailed information on not only gross body composition but also thigh muscle volume and contractile density, Wiik et al. [71] recently carried out a comprehensive battery of MRI and computed tomography (CT) examinations before and after 12 months of successful testosterone suppression and estrogen supplementation in 11 transgender women. Thigh volume (both anterior and posterior thigh) and quadriceps cross-sectional area decreased  $-4$  and  $-5\%$ , respectively, after the 12-month period, supporting previous results of modest effects of testosterone suppression on muscle mass (see Table 4). The more novel measure of radiological attenuation of the quadriceps muscle, a valid proxy of contractile density [74, 75], showed no significant change in transgender women after 12 months of treatment, whereas the parallel group of transgender men demonstrated a  $+6\%$  increase in contractile density with testosterone supplementation.

As indicated earlier (e.g. Table 1), the difference in muscle strength between males and females is often more pronounced than the difference in muscle mass. Unfortunately, few studies have examined the effects of testosterone suppression on muscle strength or other proxies of performance in transgender individuals. The first such study was published online approximately 1 year prior to the release of the current IOC policy. In this study, as well as reporting changes in muscle size, van Caenegem et al. [53] reported that hand-grip strength was reduced from baseline measurements by  $-7\%$  and  $-9\%$  after 12 and 24 months, respectively, of cross-hormone treatment in transgender women. Comparison with data in a separately-published, parallel cohort of transgender men [76] demonstrated a retained hand-grip strength advantage after 2 years of 23% over female baseline measurements (a calculated average of

baseline data obtained from control females and transgender men).

In a recent multicenter study [70], examination of 249 transgender women revealed a decrease of  $-4\%$  in grip strength after 12 months of cross-hormone treatment, with no variation between different testosterone level, age or BMI tertiles (all transgender women studied were within female reference ranges for testosterone). Despite this modest reduction in strength, transgender women retained a 17% grip strength advantage over transgender men measured at baseline. The authors noted that handgrip strength in transgender women was in approximately the 25th percentile for males but was over the 90th percentile for females, both before and after hormone treatment. This emphasizes that the strength advantage for males over females is inherently large. In another study exploring handgrip strength, albeit in late puberty adolescents, Tack et al. noted no change in grip strength after hormonal treatment (average duration 11 months) of 21 transgender girls [72].

Although grip strength provides an excellent proxy measurement for general strength in a broad population, specific assessment within different muscle groups is more valuable in a sports-specific framework. Wiik et al., [71] having determined that thigh muscle mass reduces only modestly, and that no significant changes in contractile density occur with 12 months of testosterone suppression, provided, for the first time, data for isokinetic strength measurements of both knee extension and knee flexion. They reported that muscle strength after 12 months of testosterone suppression was comparable to baseline strength. As a result, transgender women remained about 50% stronger than both the group of transgender men at baseline and a reference group of females. The authors suggested that small neural learning effects during repeated testing may explain the apparent lack of small reductions in strength that had been measured in other studies [71].

These longitudinal data comprise a clear pattern of very modest to negligible changes in muscle mass and strength in transgender women suppressing testosterone for at least 12 months. Muscle mass and strength are key physical parameters that constitute a significant, if not majority, portion of the male performance advantage, most notably in those sports where upper body strength, overall strength, and muscle mass are crucial determinants of performance. Thus, our analysis strongly suggests that the reduction in testosterone levels required by many sports federation transgender policies is insufficient to remove or reduce the male advantage, in terms of muscle mass and strength, by any meaningful degree. The relatively consistent finding of a minor (approximately  $-5\%$ ) muscle loss after the first year of treatment is also in line with studies on androgen-deprivation therapy in males with prostate cancer, where the annual loss



of lean body mass has been reported to range between  $-2$  and  $-4\%$  [77].

Although less powerful than longitudinal studies, we identified one major cross-sectional study that measured muscle mass and strength in transgender women. In this study, 23 transgender women and 46 healthy age- and height-matched control males were compared [78]. The transgender women were recruited at least 3 years after sex reassignment surgery, and the mean duration of cross-hormone treatment was 8 years. The results showed that transgender women had 17% less lean mass and 25% lower peak quadriceps muscle strength than the control males [78]. This cross-sectional comparison suggests that prolonged testosterone suppression, well beyond the time period mandated by sports federations substantially reduces muscle mass and strength in transgender women. However, the typical gap in lean mass and strength between males and females at baseline (Table 1) exceeds the reductions reported in this study [78]. The final average lean body mass of the transgender women was 51.2 kg, which puts them in the 90th percentile for women [79]. Similarly, the final grip strength was 41 kg, 25% higher than the female reference value [80]. Collectively, this implies a retained physical advantage even after 8 years of testosterone suppression. Furthermore, given that cohorts of transgender women often have slightly lower baseline measurements of muscle and strength than control males [53], and baseline measurements were unavailable for the transgender women of this cohort, the above calculations using control males reference values may be an overestimate of actual loss of muscle mass and strength, emphasizing both the need for caution when analyzing cross-sectional data in the absence of baseline assessment and the superior power of longitudinal studies quantifying within-subject changes.

#### 4.3 Endurance Performance and Cardiovascular Parameters

No controlled longitudinal study has explored the effects of testosterone suppression on endurance-based performance. Sex differences in endurance performance are generally smaller than for events relying more on muscle mass and explosive strength. Using an age grading model designed to normalize times for masters/veteran categories, Harper [81] analyzed self-selected and self-reported race times for eight transgender women runners of various age categories who had, over an average 7 year period (range 1–29 years), competed in sub-elite middle and long distance races within both the male and female categories. The age-graded scores for these eight runners were the same in both categories, suggesting that cross-hormone treatment reduced running performance by approximately the size of the typical male advantage. However, factors affecting performances in the interim, including training and injury, were uncontrolled

for periods of years to decades and there were uncertainties regarding which race times were self-reported vs. which race times were actually reported and verified, and factors such as standardization of race course and weather conditions were unaccounted for. Furthermore, one runner improved substantially post-transition, which was attributed to improved training [81]. This demonstrates that performance decrease after transition is not inevitable if training practices are improved. Unfortunately, no study to date has followed up these preliminary self-reports in a more controlled setting, so it is impossible to make any firm conclusions from this data set alone.

Circulating hemoglobin levels are androgen-dependent [82] and typically reported as 12% higher in males compared with females [4]. Hemoglobin levels appear to decrease by 11–14% with cross-hormone therapy in transgender women [62, 71], and indeed comparably sized reductions have been reported in athletes with DSDs where those athletes are sensitive to and been required to reduce testosterone [47, 83]. Oxygen-carrying capacity in transgender women is most likely reduced with testosterone suppression, with a concomitant performance penalty estimated at 2–5% for the female athletic population [83]. Furthermore, there is a robust relationship between hemoglobin mass and  $VO_{2max}$  [84, 85] and reduction in hemoglobin is generally associated with reduced aerobic capacity [86, 87]. However, hemoglobin mass is not the only parameter contributing to  $VO_{2max}$ , where central factors such as total blood volume, heart size and contractility, and peripheral factors such as capillary supply and mitochondrial content also plays a role in the final oxygen uptake [88]. Thus, while a reduction in hemoglobin is strongly predicted to impact aerobic capacity and reduce endurance performance in transgender women, it is unlikely to completely close the baseline gap in aerobic capacity between males and females.

The typical increase in body fat noted in transgender women [89, 90] may also be a disadvantage for sporting activities (e.g. running) where body weight (or fat distribution) presents a marginal disadvantage. Whether this body composition change negatively affects performance results in transgender women endurance athletes remains unknown. It is unclear to what extent the expected increase in body fat could be offset by nutritional and exercise countermeasures, as individual variation is likely to be present. For example, in the Wiik et al. study [71], 3 out of the 11 transgender women were completely resistant to the marked increase in total adipose tissue noted at the group level. This inter-individual response to treatment represents yet another challenge for sports governing bodies who most likely, given the many obstacles with case-by-case assessments, will form policies based on average effect sizes.

Altogether, the effects of testosterone suppression on performance markers for endurance athletes remain

insufficiently explored. While the negative effect on hemoglobin concentration is well documented, the effects on  $\text{VO}_{2\text{max}}$ , left ventricular size, stroke volume, blood volume, cardiac output lactate threshold, and exercise economy, all of which are important determinants of endurance performance, remain unknown. However, given the plausible disadvantages with testosterone suppression mentioned in this section, together with the more marginal male advantage in endurance-based sports, the balance between inclusion and fairness is likely closer to equilibrium in weight-bearing endurance-based sports compared with strength-based sports where the male advantage is still substantial.

## 5 Discussion

The data presented here demonstrate that superior anthropometric, muscle mass and strength parameters achieved by males at puberty, and underpinning a considerable portion of the male performance advantage over females, are not removed by the current regimen of testosterone suppression permitting participation of transgender women in female sports categories. Rather, it appears that the male performance advantage remains substantial. Currently, there is no consensus on an acceptable degree of residual advantage held by transgender women that would be tolerable in the female category of sport. There is significant dispute over this issue, especially since the physiological determinants of performance vary across different sporting disciplines. However, given the IOC position that fair competition is the overriding sporting objective [14], any residual advantage carried by transgender women raises obvious concerns about fair and safe competition in the numerous sports where muscle mass, strength and power are key performance determinants.

### 5.1 Perspectives on Athletic Status of Transgender Women

Whilst available evidence is strong and convincing that strength, skeletal- and muscle-mass derived advantages will largely remain after cross-hormone therapy in transgender women, it is acknowledged that the findings presented here are from healthy adults with regular or even low physical activity levels [91], and not highly trained athletes. Thus, further research is required in athletic transgender populations.

However, despite the current absence of empirical evidence in athletic transgender women, it is possible to evaluate potential outcomes in athletic transgender women compared with untrained cohorts. The first possibility is that athletic transgender women will experience similar reductions (approximately  $-5\%$ ) in muscle mass and strength as untrained transgender women, and will thus

retain significant advantages over a comparison group of females. As a result of higher baseline characteristics in these variables, the retained advantage may indeed be even larger. A second possibility is that by virtue of greater muscle mass and strength at baseline, pre-trained transgender women will experience larger relative decreases in muscle mass and strength if they converge with untrained transgender women, particularly if training is halted during transition. Finally, training before and during the period of testosterone suppression may attenuate the anticipated reductions, such that relative decreases in muscle mass and strength will be smaller or non-existent in transgender women who undergo training, compared to untrained (and non-training) controls.

It is well established that resistance training counteracts substantial muscle loss during atrophy conditions that are far more severe than testosterone suppression. For example, resistance exercise every third day during 90-days bed rest was sufficient to completely offset the 20% reduction in knee extensor muscle size noted in the resting control subjects [92]. More relevant to the question of transgender women, however, is to examine training effects in studies where testosterone has been suppressed in biological males. Kvorning et al. investigated, in a randomized placebo-controlled trial, how suppression of endogenous testosterone for 12 weeks influenced muscle hypertrophy and strength gains during a training program (3 days/week) that took place during the last 8 weeks of the 3-month suppression period [93]. Despite testosterone suppression to female levels of 2 nmol/L, there was a significant  $+4\%$  increase in leg lean mass and a  $+2\%$  increase in total lean body mass, and a measurable though insignificant increase in isometric knee extension strength. Moreover, in select exercises used during the training program, 10RM leg press and bench press increased  $+32\%$  and  $+17\%$ , respectively. While some of the training adaptations were lower than in the placebo group, this study demonstrates that training during a period of testosterone suppression not only counteracts muscle loss, but can actually increase muscle mass and strength.

Males with prostate cancer undergoing androgen deprivation therapy provide a second avenue to examine training effects during testosterone suppression. Testosterone levels are typically reduced to castrate levels, and the loss of lean mass has typically ranged between  $-2$  and  $-4\%$  per year [77], consistent with the findings described previously in transgender women. A recent meta-analysis concluded that exercise interventions including resistance exercise were generally effective for maintaining muscle mass and increasing muscle strength in prostate cancer patients undergoing androgen deprivation therapy [94]. It is important to emphasize that the efficacy of the different training programs may vary. For example, a 12-week training study of prostate cancer patients undergoing androgen deprivation therapy

included drop-sets to combine heavy loads and high volume while eliciting near-maximal efforts in each set [95]. This strategy resulted in significantly increased lean body mass (+3%), thigh muscle volume (+6%), knee extensor 1RM strength (+28%) and leg press muscle endurance (+110%).

In addition to the described effects of training during testosterone suppression, the effect of training prior to testosterone suppression may also contribute to the attenuation of any muscle mass and strength losses, via a molecular mechanism referred to as ‘muscle memory’ [96]. Specifically, it has been suggested that myonuclei acquired by skeletal muscle cells during training are maintained during subsequent atrophy conditions [97]. Even though this model of muscle memory has been challenged recently [98], it may facilitate an improved training response upon retraining [99]. Mechanistically, the negative effects of testosterone suppression on muscle mass are likely related to reduced levels of resting protein synthesis [100], which, together with protein breakdown, determines the net protein balance of skeletal muscle. However, testosterone may not be required to elicit a robust muscle protein synthesis response to resistance exercise [100]. Indeed, relative increases in muscle mass in men and women from resistance training are comparable, despite marked differences in testosterone levels [101], and the acute rise in testosterone apparent during resistance exercise does not predict muscle hypertrophy nor strength gains [102]. This suggests that even though testosterone is important for muscle mass, especially during puberty, the maintenance of muscle mass through resistance training is not crucially dependent on circulating testosterone levels.

Thus, in well-controlled studies in biological males who train while undergoing testosterone reduction, training is protective of, and may even enhance, muscle mass and strength attributes. Considering transgender women athletes who train during testosterone suppression, it is plausible to conclude that any losses will be similar to or even smaller in magnitude than documented in the longitudinal studies described in this review. Furthermore, pre-trained transgender women are likely to have greater muscle mass at baseline than untrained transgender women; it is possible that even with the same, rather than smaller, relative decreases in muscle mass and strength, the magnitude of retained advantage will be greater. In contrast, if pre-trained transgender women undergo testosterone suppression while refraining from intense training, it appears likely that muscle mass and strength will be lost at either the same or greater rate than untrained individuals, although there is no rationale to expect a weaker endpoint state. The degree of change in athletic transgender women is influenced by the athlete’s baseline resistance-training status, the efficacy of the implemented program and other factors such as genetic make-up and nutritional habits, but we argue that it is implausible that

athletic transgender women would achieve final muscle mass and strength metrics that are on par with reference females at comparable athletic level.

## 5.2 The Focus on Muscle Mass and Strength

We acknowledge that changes in muscle mass are not always correlated in magnitude to changes in strength measurements because muscle mass (or total mass) is not the only contributor to strength [103]. Indeed, the importance of the nervous system, e.g. muscle agonist activation (recruitment and firing frequency) and antagonist co-activation, for muscle strength must be acknowledged [104]. In addition, factors such as fiber types, biomechanical levers, pennation angle, fascicle length and tendon/extracellular matrix composition may all influence the ability to develop muscular force [105]. While there is currently limited to no information on how these factors are influenced by testosterone suppression, the impact seems to be minute, given the modest changes noted in muscle strength during cross-hormone treatment.

It is possible that estrogen replacement may affect the sensitivity of muscle to anabolic signaling and have a protective effect on muscle mass [106] explaining, in part, the modest change in muscle mass with testosterone suppression and accompanying cross-hormone treatment. Indeed, this is supported by research conducted on estrogen replacement therapy in other targeted populations [107, 108] and in several different animal models, including mice after gonadectomy [109] and ovariectomy [110].

In terms of other performance proxies relevant to sports performance, there is no research evaluating the effects of transgender hormone treatment on factors such as agility, jumping or sprint performance, competition strength performance (e.g. bench press), or discipline-specific performance. Other factors that may impact sports performance, known to be affected by testosterone and some of them measurably different between males and females, include visuospatial abilities, aggressiveness, coordination and flexibility.

## 5.3 Testosterone-Based Criteria for Inclusion of Transgender Women in Female Sports

The appropriate testosterone limit for participation of transgender women in the female category has been a matter of debate recently, where sports federations such as World Athletics recently lowered the eligibility criterion of free circulating testosterone (measured by means of liquid chromatography coupled with mass spectrometry) to <5 nmol/L. This was based, at least in part, on a thorough review by Handelsman et al. [4], where the authors concluded that, given the nonoverlapping distribution of circulating testosterone between males and females, and making an allowance



for females with mild hyperandrogenism (e.g. with polycystic ovary syndrome), the appropriate testosterone limit should be 5 rather than 10 nmol/L.

From the longitudinal muscle mass/strength studies summarised here, however, it is apparent that most therapeutic interventions result in almost complete suppression of testosterone levels, certainly well below 5 nmol/L (Table 4). Thus, with regard to transgender women athletes, we question whether current circulating testosterone level cut-off can be a meaningful decisive factor, when in fact not even suppression down to around 1 nmol/L removes the anthropometric and muscle mass/strength advantage in any significant way.

In terms of duration of testosterone suppression, it may be argued that although 12 months of treatment is not sufficient to remove the male advantage, perhaps extending the time frame of suppression would generate greater parity with female metrics. However, based on the studies reviewed here, evidence is lacking that this would diminish the male advantage to a tolerable degree. On the contrary, it appears that the net loss of lean mass and grip strength is not substantially decreased at year 2 or 3 of cross-hormone treatment (Table 4), nor evident in cohorts after an average 8 years after transition. This indicates that a plateau or a new steady state is reached within the first or second year of treatment, a phenomenon also noted in transgender men, where the increase in muscle mass seems to stabilise between the first and the second year of testosterone treatment [111].

## 6 Conclusions

We have shown that under testosterone suppression regimes typically used in clinical settings, and which comfortably exceed the requirements of sports federations for inclusion of transgender women in female sports categories by reducing testosterone levels to well below the upper tolerated limit, evidence for loss of the male performance advantage, established by testosterone at puberty and translating in elite athletes to a 10–50% performance advantage, is lacking. Rather, the data show that strength, lean body mass, muscle size and bone density are only trivially affected. The reductions observed in muscle mass, size, and strength are very small compared to the baseline differences between males and females in these variables, and thus, there are major performance and safety implications in sports where these attributes are competitively significant. These data significantly undermine the delivery of fairness and safety presumed by the criteria set out in transgender inclusion policies, particularly given the stated prioritization of fairness as an overriding objective (for the IOC). If those policies are intended to preserve fairness,

inclusion and the safety of biologically female athletes, sporting organizations may need to reassess their policies regarding inclusion of transgender women.

From a medical-ethical point of view, it may be questioned as to whether a requirement to lower testosterone below a certain level to ensure sporting participation can be justified at all. If the advantage persists to a large degree, as evidence suggests, then a stated objective of targeting a certain testosterone level to be eligible will not achieve its objective and may drive medical practice that an individual may not want or require, without achieving its intended benefit.

The research conducted so far has studied untrained transgender women. Thus, while this research is important to understand the isolated effects of testosterone suppression, it is still uncertain how transgender women athletes, perhaps undergoing advanced training regimens to counteract the muscle loss during the therapy, would respond. It is also important to recognize that performance in most sports may be influenced by factors outside muscle mass and strength, and the balance between inclusion, safety and fairness therefore differs between sports. While there is certainly a need for more focused research on this topic, including more comprehensive performance tests in transgender women athletes and studies on training capacity of transgender women undergoing hormone therapy, it is still important to recognize that the biological factors underpinning athletic performance are unequivocally established. It is, therefore, possible to make strong inferences and discuss potential performance implications despite the lack of direct sport-specific studies in athletes. Finally, since athlete safety could arguably be described as the immediate priority above considerations of fairness and inclusion, proper risk assessment should be conducted within respective sports that continue to include transgender women in the female category.

If transgender women are restricted within or excluded from the female category of sport, the important question is whether or not this exclusion (or conditional exclusion) is necessary and proportionate to the goal of ensuring fair, safe and meaningful competition. Regardless of what the future will bring in terms of revised transgender policies, it is clear that different sports differ vastly in terms of physiological determinants of success, which may create safety considerations and may alter the importance of retained performance advantages. Thus, we argue against universal guidelines for transgender athletes in sport and instead propose that each individual sports federation evaluate their own conditions for inclusivity, fairness and safety.

## Compliance with Ethical Standards

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**Informed consent** Not applicable.

**Data availability** Available upon request.

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## Endocrine Treatment of Gender-Dysphoric/ Gender-Incongruent Persons: An Endocrine Society\* Clinical Practice Guideline

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**\*Cosponsoring Associations:** American Association of Clinical Endocrinologists, American Society of Andrology, European Society for Pediatric Endocrinology, European Society of Endocrinology, Pediatric Endocrine Society, and World Professional Association for Transgender Health.

**Objective:** To update the “Endocrine Treatment of Transsexual Persons: An Endocrine Society Clinical Practice Guideline,” published by the Endocrine Society in 2009.

**Participants:** The participants include an Endocrine Society–appointed task force of nine experts, a methodologist, and a medical writer.

**Evidence:** This evidence-based guideline was developed using the Grading of Recommendations, Assessment, Development, and Evaluation approach to describe the strength of recommendations and the quality of evidence. The task force commissioned two systematic reviews and used the best available evidence from other published systematic reviews and individual studies.

**Consensus Process:** Group meetings, conference calls, and e-mail communications enabled consensus. Endocrine Society committees, members and cosponsoring organizations reviewed and commented on preliminary drafts of the guidelines.

**Conclusion:** Gender affirmation is multidisciplinary treatment in which endocrinologists play an important role. Gender-dysphoric/gender-incongruent persons seek and/or are referred to endocrinologists to develop the physical characteristics of the affirmed gender. They require a safe and effective hormone regimen that will (1) suppress endogenous sex hormone secretion determined by the person's genetic/gonadal sex and (2) maintain sex hormone levels within the normal range for the person's affirmed gender. Hormone treatment is not recommended for prepubertal gender-dysphoric/gender-incongruent persons. Those clinicians who recommend gender-affirming endocrine treatments—appropriately trained diagnosing clinicians (required), a mental health provider for adolescents (required) and mental health

professional for adults (recommended)—should be knowledgeable about the diagnostic criteria and criteria for gender-affirming treatment, have sufficient training and experience in assessing psychopathology, and be willing to participate in the ongoing care throughout the endocrine transition. We recommend treating gender-dysphoric/gender-incongruent adolescents who have entered puberty at Tanner Stage G2/B2 by suppression with gonadotropin-releasing hormone agonists. Clinicians may add gender-affirming hormones after a multidisciplinary team has confirmed the persistence of gender dysphoria/gender incongruence and sufficient mental capacity to give informed consent to this partially irreversible treatment. Most adolescents have this capacity by age 16 years old. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to age 16 years, although there is minimal published experience treating prior to 13.5 to 14 years of age. For the care of peripubertal youths and older adolescents, we recommend that an expert multidisciplinary team comprised of medical professionals and mental health professionals manage this treatment. The treating physician must confirm the criteria for treatment used by the referring mental health practitioner and collaborate with them in decisions about gender-affirming surgery in older adolescents. For adult gender-dysphoric/gender-incongruent persons, the treating clinicians (collectively) should have expertise in transgender-specific diagnostic criteria, mental health, primary care, hormone treatment, and surgery, as needed by the patient. We suggest maintaining physiologic levels of gender-appropriate hormones and monitoring for known risks and complications. When high doses of sex steroids are required to suppress endogenous sex steroids and/or in advanced age, clinicians may consider surgically removing natal gonads along with reducing sex steroid treatment. Clinicians should monitor both transgender males (female to male) and transgender females (male to female) for reproductive organ cancer risk when surgical removal is incomplete. Additionally, clinicians should persistently monitor adverse effects of sex steroids. For gender-affirming surgeries in adults, the treating physician must collaborate with and confirm the criteria for treatment used by the referring physician. Clinicians should avoid harming individuals (via hormone treatment) who have conditions other than gender dysphoria/gender incongruence and who may not benefit from the physical changes associated with this treatment. (*J Clin Endocrinol Metab* 102: 3869–3903, 2017)

## Summary of Recommendations

### 1.0 Evaluation of youth and adults

1.1. We advise that only trained mental health professionals (MHPs) who meet the following criteria should diagnose gender dysphoria (GD)/gender incongruence in adults: (1) competence in using the Diagnostic and Statistical Manual of Mental Disorders (DSM) and/or the International Statistical Classification of Diseases and Related Health Problems (ICD) for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person's understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)

- 1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or the ICD for diagnostic purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psychosocially assess the person's understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)
- 1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).

- 1.4. We recommend against puberty blocking and gender-affirming hormone treatment in pre-pubertal children with GD/gender incongruence. (1 ⊕⊕○○)
- 1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 ⊕⊕○○)

## 2.0 Treatment of adolescents

- 2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment, and are requesting treatment should initially undergo treatment to suppress pubertal development. (2 ⊕⊕○○)
- 2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty. (2 ⊕⊕○○)
- 2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 ⊕⊕○○)
- 2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years. (1 ⊕⊕○○).
- 2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 ⊕○○○)
- 2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment. (2 ⊕⊕○○)

## 3.0 Hormonal therapy for transgender adults

- 3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and

the criteria for the endocrine phase of gender transition before beginning treatment. (1 ⊕⊕⊕○)

- 3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment. (1 ⊕⊕⊕○)
- 3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 ⊕⊕○○)
- 3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 ⊕○○○)

## 4.0 Adverse outcome prevention and long-term care

- 4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every 3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 ⊕⊕○○)
- 4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 ⊕⊕○○)
- 4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 ⊕⊕○○)
- 4.4. We recommend that clinicians obtain bone mineral density (BMD) measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 ⊕⊕○○)
- 4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for non-transgender females. (2 ⊕⊕○○)
- 4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 ⊕○○○)
- 4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

## 5.0 Surgery for sex reassignment and gender confirmation

- 5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically necessary and would benefit the patient's overall health and/or well-being. (1 ⊕⊕○○)
- 5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)
- 5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)
- 5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 ⊕○○○)
- 5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 ⊕⊕○○)
- 5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 ⊕○○○)

## Changes Since the Previous Guideline

Both the current guideline and the one published in 2009 contain similar sections. Listed here are the sections contained in the current guideline and the corresponding number of recommendations: Introduction, Evaluation of Youth and Adults (5), Treatment of Adolescents (6), Hormonal Therapy for Transgender Adults (4), Adverse Outcomes Prevention and Long-term Care (7), and Surgery for Sex Reassignment and Gender Confirmation (6). The current introduction updates the diagnostic classification of "gender dysphoria/gender incongruence." It also reviews the development of "gender identity" and summarizes its natural development. The section on

clinical evaluation of both youth and adults, defines in detail the professional qualifications required of those who diagnose and treat both adolescents and adults. We advise that decisions regarding the social transition of prepubertal youth are made with the assistance of a mental health professional or similarly experienced professional. We recommend against puberty blocking followed by gender-affirming hormone treatment of prepubertal children. Clinicians should inform pubertal children, adolescents, and adults seeking gender-confirming treatment of their options for fertility preservation. Prior to treatment, clinicians should evaluate the presence of medical conditions that may be worsened by hormone depletion and/or treatment. A multidisciplinary team, preferably composed of medical and mental health professionals, should monitor treatments. Clinicians evaluating transgender adults for endocrine treatment should confirm the diagnosis of persistent gender dysphoria/gender incongruence. Physicians should educate transgender persons regarding the time course of steroid-induced physical changes. Treatment should include periodic monitoring of hormone levels and metabolic parameters, as well as assessments of bone density and the impact upon prostate, gonads, and uterus. We also make recommendations for transgender persons who plan genital gender-affirming surgery.

## Method of Development of Evidence-Based Clinical Practice Guidelines

The Clinical Guidelines Subcommittee (CGS) of the Endocrine Society deemed the diagnosis and treatment of individuals with GD/gender incongruence a priority area for revision and appointed a task force to formulate evidence-based recommendations. The task force followed the approach recommended by the Grading of Recommendations, Assessment, Development, and Evaluation group, an international group with expertise in the development and implementation of evidence-based guidelines (1). A detailed description of the grading scheme has been published elsewhere (2). The task force used the best available research evidence to develop the recommendations. The task force also used consistent language and graphical descriptions of both the strength of a recommendation and the quality of evidence. In terms of the strength of the recommendation, strong recommendations use the phrase "we recommend" and the number 1, and weak recommendations use the phrase "we suggest" and the number 2. Cross-filled circles indicate the quality of the evidence, such that ⊕○○○ denotes very low-quality evidence; ⊕⊕○○, low quality; ⊕⊕⊕○, moderate quality; and ⊕⊕⊕⊕, high quality. The task force has confidence that persons who receive care according to the strong recommendations will derive, on average, more benefit than harm. Weak recommendations require more careful consideration of the person's circumstances, values, and preferences to determine the best course of action. Linked to each recommendation is a description of the evidence and the



values that the task force considered in making the recommendation. In some instances, there are remarks in which the task force offers technical suggestions for testing conditions, dosing, and monitoring. These technical comments reflect the best available evidence applied to a typical person being treated. Often this evidence comes from the unsystematic observations of the task force and their preferences; therefore, one should consider these remarks as suggestions.

In this guideline, the task force made several statements to emphasize the importance of shared decision-making, general preventive care measures, and basic principles of the treatment of transgender persons. They labeled these “Ungraded Good Practice Statement.” Direct evidence for these statements was either unavailable or not systematically appraised and considered out of the scope of this guideline. The intention of these statements is to draw attention to these principles.

The Endocrine Society maintains a rigorous conflict-of-interest review process for developing clinical practice guidelines. All task force members must declare any potential conflicts of interest by completing a conflict-of-interest form. The CGS reviews all conflicts of interest before the Society’s Council approves the members to participate on the task force and periodically during the development of the guideline. All others participating in the guideline’s development must also disclose any conflicts of interest in the matter under study, and most of these participants must be without any conflicts of interest. The CGS and the task force have reviewed all disclosures for this guideline and resolved or managed all identified conflicts of interest.

Conflicts of interest are defined as remuneration in any amount from commercial interests; grants; research support; consulting fees; salary; ownership interests [e.g., stocks and stock options (excluding diversified mutual funds)]; honoraria and other payments for participation in speakers’ bureaus, advisory boards, or boards of directors; and all other financial benefits. Completed forms are available through the Endocrine Society office.

The Endocrine Society provided the funding for this guideline; the task force received no funding or remuneration from commercial or other entities.

## Commissioned Systematic Review

The task force commissioned two systematic reviews to support this guideline. The first one aimed to summarize the available evidence on the effect of sex steroid use in transgender individuals on lipids and cardiovascular outcomes. The review identified 29 eligible studies at moderate risk of bias. In transgender males (female to male), sex steroid therapy was associated with a statistically significant increase in serum triglycerides and low-density lipoprotein cholesterol levels. High-density lipoprotein cholesterol levels decreased significantly across all follow-up time periods. In transgender females (male to female), serum triglycerides were significantly higher without any changes in other parameters. Few myocardial infarction, stroke, venous thromboembolism (VTE), and death events were reported. These events were more frequent in transgender females. However, the

quality of the evidence was low. The second review summarized the available evidence regarding the effect of sex steroids on bone health in transgender individuals and identified 13 studies. In transgender males, there was no statistically significant difference in the lumbar spine, femoral neck, or total hip BMD at 12 and 24 months compared with baseline values before initiating masculinizing hormone therapy. In transgender females, there was a statistically significant increase in lumbar spine BMD at 12 months and 24 months compared with baseline values before initiation of feminizing hormone therapy. There was minimal information on fracture rates. The quality of evidence was also low.

## Introduction

Throughout recorded history (in the absence of an endocrine disorder) some men and women have experienced confusion and anguish resulting from rigid, forced conformity to sexual dimorphism. In modern history, there have been numerous ongoing biological, psychological, cultural, political, and sociological debates over various aspects of gender variance. The 20th century marked the emergence of a social awakening for men and women with the belief that they are “trapped” in the wrong body (3). Magnus Hirschfeld and Harry Benjamin, among others, pioneered the medical responses to those who sought relief from and a resolution to their profound discomfort. Although the term transsexual became widely known after Benjamin wrote “The Transsexual Phenomenon” (4), it was Hirschfeld who coined the term “transsexual” in 1923 to describe people who want to live a life that corresponds with their experienced gender vs their designated gender (5). Magnus Hirschfeld (6) and others (4, 7) have described other types of trans phenomena besides transsexualism. These early researchers proposed that the gender identity of these people was located somewhere along a unidimensional continuum. This continuum ranged from all male through “something in between” to all female. Yet such a classification does not take into account that people may have gender identities outside this continuum. For instance, some experience themselves as having both a male and female gender identity, whereas others completely renounce any gender classification (8, 9). There are also reports of individuals experiencing a continuous and rapid involuntary alternation between a male and female identity (10) or men who do not experience themselves as men but do not want to live as women (11, 12). In some countries, (e.g., Nepal, Bangladesh, and Australia), these nonmale or nonfemale genders are officially recognized (13). Specific treatment protocols, however, have not yet been developed for these groups.

Instead of the term transsexualism, the current classification system of the American Psychiatric Association uses the term gender dysphoria in its diagnosis of persons who are not satisfied with their designated gender (14). The current version of the World Health Organization's ICD-10 still uses the term transsexualism when diagnosing adolescents and adults. However, for the ICD-11, the World Health Organization has proposed using the term "gender incongruence" (15).

Treating persons with GD/gender incongruence (15) was previously limited to relatively ineffective elixirs or creams. However, more effective endocrinology-based treatments became possible with the availability of testosterone in 1935 and diethylstilbestrol in 1938. Reports of individuals with GD/gender incongruence who were treated with hormones and gender-affirming surgery appeared in the press during the second half of the 20th century. The Harry Benjamin International Gender Dysphoria Association was founded in September 1979 and is now called the World Professional Association for Transgender Health (WPATH). WPATH published its first Standards of Care in 1979. These standards have since been regularly updated, providing guidance for treating persons with GD/gender incongruence (16).

Prior to 1975, few peer-reviewed articles were published concerning endocrine treatment of transgender persons. Since then, more than two thousand articles about various aspects of transgender care have appeared.

It is the purpose of this guideline to make detailed recommendations and suggestions, based on existing medical literature and clinical experience, that will enable treating physicians to maximize benefit and minimize risk when caring for individuals diagnosed with GD/gender incongruence.

In the future, we need more rigorous evaluations of the effectiveness and safety of endocrine and surgical protocols. Specifically, endocrine treatment protocols for GD/gender incongruence should include the careful assessment of the following: (1) the effects of prolonged delay of puberty in adolescents on bone health, gonadal function, and the brain (including effects on cognitive, emotional, social, and sexual development); (2) the effects of treatment in adults on sex hormone levels; (3) the requirement for and the effects of progestins and other agents used to suppress endogenous sex steroids during treatment; and (4) the risks and benefits of gender-affirming hormone treatment in older transgender people.

To successfully establish and enact these protocols, a commitment of mental health and endocrine investigators is required to collaborate in long-term, large-scale

studies across countries that use the same diagnostic and inclusion criteria, medications, assay methods, and response assessment tools (*e.g.*, the European Network for the Investigation of Gender Incongruence) (17, 18).

Terminology and its use vary and continue to evolve. Table 1 contains the definitions of terms as they are used throughout this guideline.

## Biological Determinants of Gender Identity Development

One's self-awareness as male or female changes gradually during infant life and childhood. This process of cognitive and affective learning evolves with interactions with parents, peers, and environment. A fairly accurate timetable exists outlining the steps in this process (19). Normative psychological literature, however, does not address if and when gender identity becomes crystallized and what factors contribute to the development of a gender identity that is not congruent with the gender of rearing. Results of studies from a variety of biomedical disciplines—genetic, endocrine, and neuroanatomic—support the concept that gender identity and/or gender expression (20) likely reflect a complex interplay of biological, environmental, and cultural factors (21, 22).

With respect to endocrine considerations, studies have failed to find differences in circulating levels of sex steroids between transgender and nontransgender individuals (23). However, studies in individuals with a disorder/difference of sex development (DSD) have informed our understanding of the role that hormones may play in gender identity outcome, even though most persons with GD/gender incongruence do not have a DSD. For example, although most 46,XX adult individuals with virilizing congenital adrenal hyperplasia caused by mutations in *CYP21A2* reported a female gender identity, the prevalence of GD/gender incongruence was much greater in this group than in the general population without a DSD. This supports the concept that there is a role for prenatal/postnatal androgens in gender development (24–26), although some studies indicate that prenatal androgens are more likely to affect gender behavior and sexual orientation rather than gender identity *per se* (27, 28).

Researchers have made similar observations regarding the potential role of androgens in the development of gender identity in other individuals with DSD. For example, a review of two groups of 46,XY persons, each with androgen synthesis deficiencies and female raised, reported transgender male (female-to-male) gender role changes in 56% to 63% and 39% to 64% of patients, respectively (29). Also, in 46,XY female-raised individuals with cloacal

Table 1. Definitions of Terms Used in This Guideline

*Biological sex, biological male or female:* These terms refer to physical aspects of maleness and femaleness. As these may not be in line with each other (e.g., a person with XY chromosomes may have female-appearing genitalia), the terms biological sex and biological male or female are imprecise and should be avoided.

*Cisgender:* This means not transgender. An alternative way to describe individuals who are not transgender is “non-transgender people.”

*Gender-affirming (hormone) treatment:* See “gender reassignment”

*Gender dysphoria:* This is the distress and unease experienced if gender identity and designated gender are not completely congruent (see Table 2). In 2013, the American Psychiatric Association released the fifth edition of the DSM-5, which replaced “gender identity disorder” with “gender dysphoria” and changed the criteria for diagnosis.

*Gender expression:* This refers to external manifestations of gender, expressed through one’s name, pronouns, clothing, haircut, behavior, voice, or body characteristics. Typically, transgender people seek to make their gender expression align with their gender identity, rather than their designated gender.

*Gender identity/experienced gender:* This refers to one’s internal, deeply held sense of gender. For transgender people, their gender identity does not match their sex designated at birth. Most people have a gender identity of man or woman (or boy or girl). For some people, their gender identity does not fit neatly into one of those two choices. Unlike gender expression (see below), gender identity is not visible to others.

*Gender identity disorder:* This is the term used for GD/gender incongruence in previous versions of DSM (see “gender dysphoria”). The ICD-10 still uses the term for diagnosing child diagnoses, but the upcoming ICD-11 has proposed using “gender incongruence of childhood.”

*Gender incongruence:* This is an umbrella term used when the gender identity and/or gender expression differs from what is typically associated with the designated gender. Gender incongruence is also the proposed name of the gender identity–related diagnoses in ICD-11. Not all individuals with gender incongruence have gender dysphoria or seek treatment.

*Gender variance:* See “gender incongruence”

*Gender reassignment:* This refers to the treatment procedure for those who want to adapt their bodies to the experienced gender by means of hormones and/or surgery. This is also called gender-confirming or gender-affirming treatment.

*Gender-reassignment surgery (gender-confirming/gender-affirming surgery):* These terms refer only to the surgical part of gender-confirming/gender-affirming treatment.

*Gender role:* This refers to behaviors, attitudes, and personality traits that a society (in a given culture and historical period) designates as masculine or feminine and/or that society associates with or considers typical of the social role of men or women.

*Sex designated at birth:* This refers to sex assigned at birth, usually based on genital anatomy.

*Sex:* This refers to attributes that characterize biological maleness or femaleness. The best known attributes include the sex-determining genes, the sex chromosomes, the H-Y antigen, the gonads, sex hormones, internal and external genitalia, and secondary sex characteristics.

*Sexual orientation:* This term describes an individual’s enduring physical and emotional attraction to another person. Gender identity and sexual orientation are not the same. Irrespective of their gender identity, transgender people may be attracted to women (gynephilic), attracted to men (androphilic), bisexual, asexual, or queer.

*Transgender:* This is an umbrella term for people whose gender identity and/or gender expression differs from what is typically associated with their sex designated at birth. Not all transgender individuals seek treatment.

*Transgender male (also: trans man, female-to-male, transgender male):* This refers to individuals assigned female at birth but who identify and live as men.

*Transgender woman (also: trans woman, male-to-female, transgender female):* This refers to individuals assigned male at birth but who identify and live as women.

*Transition:* This refers to the process during which transgender persons change their physical, social, and/or legal characteristics consistent with the affirmed gender identity. Prepubertal children may choose to transition socially.

*Transsexual:* This is an older term that originated in the medical and psychological communities to refer to individuals who have permanently transitioned through medical interventions or desired to do so.

extrophy and penile agenesis, the occurrence of transgender male changes was significantly more prevalent than in the general population (30, 31). However, the fact that a high percentage of individuals with the same conditions did not change gender suggests that cultural factors may play a role as well.

With respect to genetics and gender identity, several studies have suggested heritability of GD/gender incongruence (32, 33). In particular, a study by Heylens *et al.* (33) demonstrated a 39.1% concordance rate for gender identity disorder (based on the DSM-IV criteria) in 23 monozygotic twin pairs but no concordance in 21 same-sex dizygotic or seven opposite-sex twin pairs. Although numerous investigators have sought to identify

specific genes associated with GD/gender incongruence, such studies have been inconsistent and without strong statistical significance (34–38).

Studies focusing on brain structure suggest that the brain phenotypes of people with GD/gender incongruence differ in various ways from control males and females, but that there is not a complete sex reversal in brain structures (39).

In summary, although there is much that is still unknown with respect to gender identity and its expression, compelling studies support the concept that biologic factors, in addition to environmental factors, contribute to this fundamental aspect of human development.

**Natural History of Children With GD/Gender Incongruence**

With current knowledge, we cannot predict the psychosexual outcome for any specific child. Prospective follow-up studies show that childhood GD/gender incongruence does not invariably persist into adolescence and adulthood (so-called “desisters”). Combining all outcome studies to date, the GD/gender incongruence of a minority of prepubertal children appears to persist in adolescence (20, 40). In adolescence, a significant number of these desisters identify as homosexual or bisexual. It may be that children who only showed some gender nonconforming characteristics have been included in the follow-up studies, because the DSM-IV text revision criteria for a diagnosis were rather broad. However, the persistence of GD/gender incongruence into adolescence is more likely if it had been extreme in childhood (41, 42). With the newer, stricter criteria of the DSM-5 (Table 2), persistence rates may well be different in future studies.

**1.0 Evaluation of Youth and Adults**

Gender-affirming treatment is a multidisciplinary effort. After evaluation, education, and diagnosis, treatment may include mental health care, hormone therapy, and/or surgical therapy. Together with an MHP, hormone-prescribing clinicians should examine the psychosocial impact of the potential changes on people’s lives, including mental health, friends, family, jobs, and their role in society. Transgender individuals should be encouraged to experience living in the new gender role and assess whether

this improves their quality of life. Although the focus of this guideline is gender-affirming hormone therapy, collaboration with appropriate professionals responsible for each aspect of treatment maximizes a successful outcome.

**Diagnostic assessment and mental health care**

GD/gender incongruence may be accompanied with psychological or psychiatric problems (43–51). It is therefore necessary that clinicians who prescribe hormones and are involved in diagnosis and psychosocial assessment meet the following criteria: (1) are competent in using the DSM and/or the ICD for diagnostic purposes, (2) are able to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (e.g., body dysmorphic disorder), (3) are trained in diagnosing psychiatric conditions, (4) undertake or refer for appropriate treatment, (5) are able to do a psychosocial assessment of the patient’s understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) regularly attend relevant professional meetings.

Because of the psychological vulnerability of many individuals with GD/gender incongruence, it is important that mental health care is available before, during, and sometimes also after transitioning. For children and adolescents, an MHP who has training/experience in child and adolescent gender development (as well as child and adolescent psychopathology) should make the diagnosis, because assessing GD/gender incongruence in children and adolescents is often extremely complex.

During assessment, the clinician obtains information from the individual seeking gender-affirming treatment. In the case

**Table 2. DSM-5 Criteria for Gender Dysphoria in Adolescents and Adults**

- A. A marked incongruence between one’s experienced/expressed gender and natal gender of at least 6 mo in duration, as manifested by at least two of the following:
    - 1. A marked incongruence between one’s experienced/expressed gender and primary and/or secondary sex characteristics (or in young adolescents, the anticipated secondary sex characteristics)
    - 2. A strong desire to be rid of one’s primary and/or secondary sex characteristics because of a marked incongruence with one’s experienced/expressed gender (or in young adolescents, a desire to prevent the development of the anticipated secondary sex characteristics)
    - 3. A strong desire for the primary and/or secondary sex characteristics of the other gender
    - 4. A strong desire to be of the other gender (or some alternative gender different from one’s designated gender)
    - 5. A strong desire to be treated as the other gender (or some alternative gender different from one’s designated gender)
    - 6. A strong conviction that one has the typical feelings and reactions of the other gender (or some alternative gender different from one’s designated gender)
  - B. The condition is associated with clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- Specify if:
- 1. The condition exists with a disorder of sex development.
  - 2. The condition is posttransitional, in that the individual has transitioned to full-time living in the desired gender (with or without legalization of gender change) and has undergone (or is preparing to have) at least one sex-related medical procedure or treatment regimen—namely, regular sex hormone treatment or gender reassignment surgery confirming the desired gender (e.g., penectomy, vaginoplasty in natal males; mastectomy or phalloplasty in natal females).

Reference: American Psychiatric Association (14).



of adolescents, the clinician also obtains information from the parents or guardians regarding various aspects of the child’s general and psychosexual development and current functioning. On the basis of this information, the clinician:

- decides whether the individual fulfills criteria for treatment (see Tables 2 and 3) for GD/gender incongruence (DSM-5) or transsexualism (DSM-5 and/or ICD-10);
- informs the individual about the possibilities and limitations of various kinds of treatment (hormonal/surgical and nonhormonal), and if medical treatment is desired, provides correct information to prevent unrealistically high expectations;
- assesses whether medical interventions may result in unfavorable psychological and social outcomes.

In cases in which severe psychopathology, circumstances, or both seriously interfere with the diagnostic work or make satisfactory treatment unlikely, clinicians should assist the adolescent in managing these other issues. Literature on postoperative regret suggests that besides poor quality of surgery, severe psychiatric comorbidity and lack of support may interfere with positive outcomes (52–56).

For adolescents, the diagnostic procedure usually includes a complete psychodiagnostic assessment (57) and an assessment of the decision-making capability of the youth. An evaluation to assess the family’s ability to endure stress, give support, and deal with the complexities of the adolescent’s situation should be part of the diagnostic phase (58).

**Social transitioning**

A change in gender expression and role (which may involve living part time or full time in another gender role that is consistent with one’s gender identity) may test the person’s resolve, the capacity to function in the affirmed gender, and the adequacy of social, economic, and psychological supports. It assists both the individual and the clinician in their judgments about how to proceed (16). During social transitioning, the person’s feelings about the social transformation (including coping with the responses of others) is a major focus of the counseling. The optimal timing for social transitioning may differ between individuals. Sometimes people wait until they

start gender-affirming hormone treatment to make social transitioning easier, but individuals increasingly start social transitioning long before they receive medically supervised, gender-affirming hormone treatment.

**Criteria**

Adolescents and adults seeking gender-affirming hormone treatment and surgery should satisfy certain criteria before proceeding (16). Criteria for gender-affirming hormone therapy for adults are in Table 4, and criteria for gender-affirming hormone therapy for adolescents are in Table 5. Follow-up studies in adults meeting these criteria indicate a high satisfaction rate with treatment (59). However, the quality of evidence is usually low. A few follow-up studies on adolescents who fulfilled these criteria also indicated good treatment results (60–63).

**Recommendations for Those Involved in the Gender-Affirming Hormone Treatment of Individuals With GD/Gender Incongruence**

- 1.1. We advise that only trained MHPs who meet the following criteria should diagnose GD/gender incongruence in adults: (1) competence in using the DSM and/or the ICD for diagnostic purposes, (2) the ability to diagnose GD/gender incongruence and make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (3) training in diagnosing psychiatric conditions, (4) the ability to undertake or refer for appropriate treatment, (5) the ability to psychosocially assess the person’s understanding, mental health, and social conditions that can impact gender-affirming hormone therapy, and (6) a practice of regularly attending relevant professional meetings. (Ungraded Good Practice Statement)
- 1.2. We advise that only MHPs who meet the following criteria should diagnose GD/gender incongruence in children and adolescents: (1) training in child and adolescent developmental psychology and psychopathology, (2) competence in using the DSM and/or ICD for diagnostic

**Table 3. ICD-10 Criteria for Transsexualism**

**Transsexualism (F64.0) has three criteria:**

1. The desire to live and be accepted as a member of the opposite sex, usually accompanied by the wish to make his or her body as congruent as possible with the preferred sex through surgery and hormone treatments.
2. The transsexual identity has been present persistently for at least 2 y.
3. The disorder is not a symptom of another mental disorder or a genetic, DSD, or chromosomal abnormality.

**Table 4. Criteria for Gender-Affirming Hormone Therapy for Adults**

1. Persistent, well-documented gender dysphoria/gender incongruence
2. The capacity to make a fully informed decision and to consent for treatment
3. The age of majority in a given country (if younger, follow the criteria for adolescents)
4. Mental health concerns, if present, must be reasonably well controlled

Reproduced from World Professional Association for Transgender Health (16).

purposes, (3) the ability to make a distinction between GD/gender incongruence and conditions that have similar features (*e.g.*, body dysmorphic disorder), (4) training in diagnosing psychiatric conditions, (5) the ability to undertake or refer for appropriate treatment, (6) the ability to psycho-socially assess the person’s understanding and social conditions that can impact gender-affirming hormone therapy, (7) a practice of regularly attending relevant professional meetings, and (8) knowledge of the criteria for puberty blocking and gender-affirming hormone treatment in adolescents. (Ungraded Good Practice Statement)

**Evidence**

Individuals with gender identity issues may have psychological or psychiatric problems (43–48, 50, 51, 64, 65). It is therefore necessary that clinicians making the diagnosis are able to make a distinction between GD/gender incongruence and conditions that have similar features. Examples of conditions with similar features are body dysmorphic disorder, body identity integrity disorder (a condition in which individuals have a sense that their anatomical configuration as an able-bodied person is somehow wrong or inappropriate) (66), or certain forms of eunuchism (in which a person is preoccupied with or engages in castration and/or penectomy for

**Table 5. Criteria for Gender-Affirming Hormone Therapy for Adolescents**

**Adolescents are eligible for GnRH agonist treatment if:**

1. A qualified MHP has confirmed that:
  - the adolescent has demonstrated a long-lasting and intense pattern of gender nonconformity or gender dysphoria (whether suppressed or expressed),
  - gender dysphoria worsened with the onset of puberty,
  - any coexisting psychological, medical, or social problems that could interfere with treatment (*e.g.*, that may compromise treatment adherence) have been addressed, such that the adolescent’s situation and functioning are stable enough to start treatment,
  - the adolescent has sufficient mental capacity to give informed consent to this (reversible) treatment,
2. And the adolescent:
  - has been informed of the effects and side effects of treatment (including potential loss of fertility if the individual subsequently continues with sex hormone treatment) and options to preserve fertility,
  - has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,
3. And a pediatric endocrinologist or other clinician experienced in pubertal assessment
  - agrees with the indication for GnRH agonist treatment,
  - has confirmed that puberty has started in the adolescent (Tanner stage  $\geq$ G2/B2),
  - has confirmed that there are no medical contraindications to GnRH agonist treatment.

**Adolescents are eligible for subsequent sex hormone treatment if:**

1. A qualified MHP has confirmed:
  - the persistence of gender dysphoria,
  - any coexisting psychological, medical, or social problems that could interfere with treatment (*e.g.*, that may compromise treatment adherence) have been addressed, such that the adolescent’s situation and functioning are stable enough to start sex hormone treatment,
  - the adolescent has sufficient mental capacity (which most adolescents have by age 16 years) to estimate the consequences of this (partly) irreversible treatment, weigh the benefits and risks, and give informed consent to this (partly) irreversible treatment,
2. And the adolescent:
  - has been informed of the (irreversible) effects and side effects of treatment (including potential loss of fertility and options to preserve fertility),
  - has given informed consent and (particularly when the adolescent has not reached the age of legal medical consent, depending on applicable legislation) the parents or other caretakers or guardians have consented to the treatment and are involved in supporting the adolescent throughout the treatment process,
3. And a pediatric endocrinologist or other clinician experienced in pubertal induction:
  - agrees with the indication for sex hormone treatment,
  - has confirmed that there are no medical contraindications to sex hormone treatment.

Reproduced from World Professional Association for Transgender Health (16).

reasons that are not gender identity related) (11). Clinicians should also be able to diagnose psychiatric conditions accurately and ensure that these conditions are treated appropriately, particularly when the conditions may complicate treatment, affect the outcome of gender-affirming treatment, or be affected by hormone use.

### Values and preferences

The task force placed a very high value on avoiding harm from hormone treatment in individuals who have conditions other than GD/gender incongruence and who may not benefit from the physical changes associated with this treatment and placed a low value on any potential benefit these persons believe they may derive from hormone treatment. This justifies the good practice statement.

- 1.3. We advise that decisions regarding the social transition of prepubertal youths with GD/gender incongruence are made with the assistance of an MHP or another experienced professional. (Ungraded Good Practice Statement).
- 1.4. We recommend against puberty blocking and gender-affirming hormone treatment in prepubertal children with GD/gender incongruence. (1 ⊕⊕⊕⊕)

### Evidence

In most children diagnosed with GD/gender incongruence, it did not persist into adolescence. The percentages differed among studies, probably dependent on which version of the DSM clinicians used, the patient's age, the recruitment criteria, and perhaps cultural factors. However, the large majority (about 85%) of prepubertal children with a childhood diagnosis did not remain GD/gender incongruent in adolescence (20). If children have completely socially transitioned, they may have great difficulty in returning to the original gender role upon entering puberty (40). Social transition is associated with the persistence of GD/gender incongruence as a child progresses into adolescence. It may be that the presence of GD/gender incongruence in prepubertal children is the earliest sign that a child is destined to be transgender as an adolescent/adult (20). However, social transition (in addition to GD/gender incongruence) has been found to contribute to the likelihood of persistence.

This recommendation, however, does not imply that children should be discouraged from showing gender-variant behaviors or should be punished for exhibiting such behaviors. In individual cases, an early complete social transition may result in a more favorable outcome, but there are currently no criteria to identify the

GD/gender-incongruent children to whom this applies. At the present time, clinical experience suggests that persistence of GD/gender incongruence can only be reliably assessed after the first signs of puberty.

### Values and preferences

The task force placed a high value on avoiding harm with gender-affirming hormone therapy in prepubertal children with GD/gender incongruence. This justifies the strong recommendation in the face of low-quality evidence.

- 1.5. We recommend that clinicians inform and counsel all individuals seeking gender-affirming medical treatment regarding options for fertility preservation prior to initiating puberty suppression in adolescents and prior to treating with hormonal therapy of the affirmed gender in both adolescents and adults. (1 ⊕⊕⊕⊕)

### Remarks

Persons considering hormone use for gender affirmation need adequate information about this treatment in general and about fertility effects of hormone treatment in particular to make an informed and balanced decision (67, 68). Because young adolescents may not feel qualified to make decisions about fertility and may not fully understand the potential effects of hormonal interventions, consent and protocol education should include parents, the referring MHP(s), and other members of the adolescent's support group. To our knowledge, there are no formally evaluated decision aids available to assist in the discussion and decision regarding the future fertility of adolescents or adults beginning gender-affirming treatment.

Treating early pubertal youth with GnRH analogs will temporarily impair spermatogenesis and oocyte maturation. Given that an increasing number of transgender youth want to preserve fertility potential, delaying or temporarily discontinuing GnRH analogs to promote gamete maturation is an option. This option is often not preferred, because mature sperm production is associated with later stages of puberty and with the significant development of secondary sex characteristics.

For those designated male at birth with GD/gender incongruence and who are in early puberty, sperm production and the development of the reproductive tract are insufficient for the cryopreservation of sperm. However, prolonged pubertal suppression using GnRH analogs is reversible and clinicians should inform these individuals that sperm production can be initiated following prolonged gonadotropin suppression. This can be accomplished by spontaneous gonadotropin recovery after

cessation of GnRH analogs or by gonadotropin treatment and will probably be associated with physical manifestations of testosterone production, as stated above. Note that there are no data in this population concerning the time required for sufficient spermatogenesis to collect enough sperm for later fertility. In males treated for precocious puberty, spermarche was reported 0.7 to 3 years after cessation of GnRH analogs (69). In adult men with gonadotropin deficiency, sperm are noted in seminal fluid by 6 to 12 months of gonadotropin treatment. However, sperm numbers when partners of these patients conceive are far below the “normal range” (70, 71).

In girls, no studies have reported long-term, adverse effects of pubertal suppression on ovarian function after treatment cessation (72, 73). Clinicians should inform adolescents that no data are available regarding either time to spontaneous ovulation after cessation of GnRH analogs or the response to ovulation induction following prolonged gonadotropin suppression.

In males with GD/gender incongruence, when medical treatment is started in a later phase of puberty or in adulthood, spermatogenesis is sufficient for cryopreservation and storage of sperm. *In vitro* spermatogenesis is currently under investigation. Restoration of spermatogenesis after prolonged estrogen treatment has not been studied.

In females with GD/gender incongruence, the effect of prolonged treatment with exogenous testosterone on ovarian function is uncertain. There have been reports of an increased incidence of polycystic ovaries in transgender males, both prior to and as a result of androgen treatment (74–77), although these reports were not confirmed by others (78). Pregnancy has been reported in transgender males who have had prolonged androgen treatment and have discontinued testosterone but have not had genital surgery (79, 80). A reproductive endocrine gynecologist can counsel patients before gender-affirming hormone treatment or surgery regarding potential fertility options (81). Techniques for cryopreservation of oocytes, embryos, and ovarian tissue continue to improve, and oocyte maturation of immature tissue is being studied (82).

## 2.0 Treatment of Adolescents

During the past decade, clinicians have progressively acknowledged the suffering of young adolescents with GD/gender incongruence. In some forms of GD/gender incongruence, psychological interventions may be useful and sufficient. However, for many adolescents with GD/gender incongruence, the pubertal physical changes are unbearable. As early medical intervention may prevent

psychological harm, various clinics have decided to start treating young adolescents with GD/gender incongruence with puberty-suppressing medication (a GnRH analog). As compared with starting gender-affirming treatment long after the first phases of puberty, a benefit of pubertal suppression at early puberty may be a better psychological and physical outcome.

In girls, the first physical sign of puberty is the budding of the breasts followed by an increase in breast and fat tissue. Breast development is also associated with the pubertal growth spurt, and menarche occurs ~2 years later. In boys, the first physical change is testicular growth. A testicular volume  $\geq 4$  mL is seen as consistent with the initiation of physical puberty. At the beginning of puberty, estradiol and testosterone levels are still low and are best measured in the early morning with an ultrasensitive assay. From a testicular volume of 10 mL, daytime testosterone levels increase, leading to virilization (83). Note that pubic hair and/or axillary hair/odor may not reflect the onset of gonadarche; instead, it may reflect adrenarche alone.

- 2.1. We suggest that adolescents who meet diagnostic criteria for GD/gender incongruence, fulfill criteria for treatment (Table 5), and are requesting treatment should initially undergo treatment to suppress pubertal development. (2  $\oplus\oplus\oplus\oplus$ )
- 2.2. We suggest that clinicians begin pubertal hormone suppression after girls and boys first exhibit physical changes of puberty (Tanner stages G2/B2). (2  $\oplus\oplus\oplus\oplus$ )

## Evidence

Pubertal suppression can expand the diagnostic phase by a long period, giving the subject more time to explore options and to live in the experienced gender before making a decision to proceed with gender-affirming sex hormone treatments and/or surgery, some of which is irreversible (84, 85). Pubertal suppression is fully reversible, enabling full pubertal development in the natal gender, after cessation of treatment, if appropriate. The experience of full endogenous puberty is an undesirable condition for the GD/gender-incongruent individual and may seriously interfere with healthy psychological functioning and well-being. Treating GD/gender-incongruent adolescents entering puberty with GnRH analogs has been shown to improve psychological functioning in several domains (86).

Another reason to start blocking pubertal hormones early in puberty is that the physical outcome is improved compared with initiating physical transition after puberty has been completed (60, 62). Looking like a man or woman when living as the opposite sex creates difficult



barriers with enormous life-long disadvantages. We therefore advise starting suppression in early puberty to prevent the irreversible development of undesirable secondary sex characteristics. However, adolescents with GD/gender incongruence should experience the first changes of their endogenous spontaneous puberty, because their emotional reaction to these first physical changes has diagnostic value in establishing the persistence of GD/gender incongruence (85). Thus, Tanner stage 2 is the optimal time to start pubertal suppression. However, pubertal suppression treatment in early puberty will limit the growth of the penis and scrotum, which will have a potential effect on future surgical treatments (87).

Clinicians can also use pubertal suppression in adolescents in later pubertal stages to stop menses in transgender males and prevent facial hair growth in transgender females. However, in contrast to the effects in early pubertal adolescents, physical sex characteristics (such as more advanced breast development in transgender boys and lowering of the voice and outgrowth of the jaw and brow in transgender girls) are not reversible.

Values and preferences

These recommendations place a high value on avoiding an unsatisfactory physical outcome when secondary sex characteristics have become manifest and irreversible, a higher value on psychological well-being, and a lower value on avoiding potential harm from early pubertal suppression.

Remarks

Table 6 lists the Tanner stages of breast and male genital development. Careful documentation of hallmarks of pubertal development will ensure precise timing when initiating pubertal suppression once puberty has started. Clinicians can use pubertal LH and sex steroid levels to confirm that puberty has progressed sufficiently before starting pubertal suppression (88). Reference

ranges for sex steroids by Tanner stage may vary depending on the assay used. Ultrasensitive sex steroid and gonadotropin assays will help clinicians document early pubertal changes.

Irreversible and, for GD/gender-incongruent adolescents, undesirable sex characteristics in female puberty are breasts, female body habitus, and, in some cases, relative short stature. In male puberty, they are a prominent Adam’s apple; low voice; male bone configuration, such as a large jaw, big feet and hands, and tall stature; and male hair pattern on the face and extremities.

2.3. We recommend that, where indicated, GnRH analogues are used to suppress pubertal hormones. (1 |⊕⊕○○)

Evidence

Clinicians can suppress pubertal development and gonadal function most effectively via gonadotropin suppression using GnRH analogs. GnRH analogs are long-acting agonists that suppress gonadotropins by GnRH receptor desensitization after an initial increase of gonadotropins during ~10 days after the first and (to a lesser degree) the second injection (89). Antagonists immediately suppress pituitary gonadotropin secretion (90, 91). Long-acting GnRH analogs are the currently preferred treatment option. Clinicians may consider long-acting GnRH antagonists when evidence on their safety and efficacy in adolescents becomes available.

During GnRH analog treatment, slight development of secondary sex characteristics may regress, and in a later phase of pubertal development, it will stop. In girls, breast tissue will become atrophic, and menses will stop. In boys, virilization will stop, and testicular volume may decrease (92).

An advantage of using GnRH analogs is the reversibility of the intervention. If, after extensive exploration of his/her transition wish, the individual no longer desires transition, they can discontinue pubertal suppression. In subjects with

Table 6. Tanner Stages of Breast Development and Male External Genitalia
The description of Tanner stages for breast development: 1. Prepubertal 2. Breast and papilla elevated as small mound; areolar diameter increased 3. Breast and areola enlarged, no contour separation 4. Areola and papilla form secondary mound 5. Mature; nipple projects, areola part of general breast contour For penis and testes: 1. Prepubertal, testicular volume <4 mL 2. Slight enlargement of penis; enlarged scrotum, pink, texture altered, testes 4–6 mL 3. Penis longer, testes larger (8–12 mL) 4. Penis and glans larger, including increase in breadth; testes larger (12–15 mL), scrotum dark 5. Penis adult size; testicular volume > 15 mL

Adapted from Lawrence (56).

precocious puberty, spontaneous pubertal development has been shown to resume after patients discontinue taking GnRH analogs (93).

Recommendations 2.1 to 2.3 are supported by a prospective follow-up study from The Netherlands. This report assessed mental health outcomes in 55 transgender adolescents/young adults (22 transgender females and 33 transgender males) at three time points: (1) before the start of GnRH agonist (average age of 14.8 years at start of treatment), (2) at initiation of gender-affirming hormones (average age of 16.7 years at start of treatment), and (3) 1 year after “gender-reassignment surgery” (average age of 20.7 years) (63). Despite a decrease in depression and an improvement in general mental health functioning, GD/gender incongruence persisted through pubertal suppression, as previously reported (86). However, following sex hormone treatment and gender-reassignment surgery, GD/gender incongruence was resolved and psychological functioning steadily improved (63). Furthermore, well-being was similar to or better than that reported by age-matched young adults from the general population, and none of the study participants regretted treatment. This study represents the first long-term follow-up of individuals managed according to currently existing clinical practice guidelines for transgender youth, and it underscores the benefit of the multidisciplinary approach pioneered in The Netherlands; however, further studies are needed.

### Side effects

The primary risks of pubertal suppression in GD/gender-incongruent adolescents may include adverse effects on bone mineralization (which can theoretically be reversed with sex hormone treatment), compromised fertility if the person subsequently is treated with sex hormones, and unknown effects on brain development. Few data are available on the effect of GnRH analogs on BMD in adolescents with GD/gender incongruence. Initial data in GD/gender-incongruent subjects demonstrated no change of absolute areal BMD during 2 years of GnRH analog therapy but a decrease in BMD  $z$  scores (85). A recent study also suggested suboptimal bone mineral accrual during GnRH analog treatment. The study reported a decrease in areal BMD  $z$  scores and of bone mineral apparent density  $z$  scores (which takes the size of the bone into account) in 19 transgender males treated with GnRH analogs from a mean age of 15.0 years (standard deviation = 2.0 years) for a median duration of 1.5 years (0.3 to 5.2 years) and in 15 transgender females treated from 14.9 ( $\pm 1.9$ ) years for 1.3 years (0.5 to 3.8 years), although not all changes were statistically significant (94). There was incomplete catch-up at age 22 years after sex hormone treatment from age 16.6 ( $\pm 1.4$ )

years for a median duration of 5.8 years (3.0 to 8.0 years) in transgender females and from age 16.4 ( $\pm 2.3$ ) years for 5.4 years (2.8 to 7.8 years) in transgender males. Little is known about more prolonged use of GnRH analogs. Researchers reported normal BMD  $z$  scores at age 35 years in one individual who used GnRH analogs from age 13.7 years until age 18.6 years before initiating sex hormone treatment (65).

Additional data are available from individuals with late puberty or GnRH analog treatment of other indications. Some studies reported that men with constitutionally delayed puberty have decreased BMD in adulthood (95). However, other studies reported that these men have normal BMD (96, 97). Treating adults with GnRH analogs results in a decrease of BMD (98). In children with central precocious puberty, treatment with GnRH analogs has been found to result in a decrease of BMD during treatment by some (99) but not others (100). Studies have reported normal BMD after discontinuing therapy (69, 72, 73, 101, 102). In adolescents treated with growth hormone who are small for gestational age and have normal pubertal timing, 2-year GnRH analog treatments did not adversely affect BMD (103). Calcium supplementation may be beneficial in optimizing bone health in GnRH analog-treated individuals (104). There are no studies of vitamin D supplementation in this context, but clinicians should offer supplements to vitamin D-deficient adolescents. Physical activity, especially during growth, is important for bone mass in healthy individuals (103) and is therefore likely to be beneficial for bone health in GnRH analog-treated subjects.

GnRH analogs did not induce a change in body mass index standard deviation score in GD/gender-incongruent adolescents (94) but caused an increase in fat mass and decrease in lean body mass percentage (92). Studies in girls treated for precocious puberty also reported a stable body mass index standard deviation score during treatment (72) and body mass index and body composition comparable to controls after treatment (73).

Arterial hypertension has been reported as an adverse effect in a few girls treated with GnRH analogs for precocious/early puberty (105, 106). Blood pressure monitoring before and during treatment is recommended.

Individuals may also experience hot flashes, fatigue, and mood alterations as a consequence of pubertal suppression. There is no consensus on treatment of these side effects in this context.

It is recommended that any use of pubertal blockers (and subsequent use of sex hormones, as detailed below) include a discussion about implications for fertility (see recommendation 1.3). Transgender adolescents may

want to preserve fertility, which may be otherwise compromised if puberty is suppressed at an early stage and the individual completes phenotypic transition with the use of sex hormones.

Limited data are available regarding the effects of GnRH analogs on brain development. A single cross-sectional study demonstrated no compromise of executive function (107), but animal data suggest there may be an effect of GnRH analogs on cognitive function (108).

Values and preferences

Our recommendation of GnRH analogs places a higher value on the superior efficacy, safety, and reversibility of the pubertal hormone suppression achieved (as compared with the alternatives) and a relatively lower value on limiting the cost of therapy. Of the available alternatives, depot and oral progestin preparations are effective. Experience with this treatment dates back prior to the emergence of GnRH analogs for treating precocious puberty in papers from the 1960s and early 1970s (109–112). These compounds are usually safe, but some side effects have been reported (113–115). Only two recent studies involved transgender youth (116, 117). One of these studies described the use of oral lynestrenol monotherapy followed by the addition of testosterone treatment in transgender boys who were at Tanner stage B4 or further at the start of treatment (117). They found lynestrenol safe, but gonadotropins were not fully suppressed. The study reported metrorrhagia in approximately half of the individuals, mainly in the first 6 months. Acne, headache, hot flashes, and fatigue were other frequent side effects. Another progestin that has been studied in the United States is medroxyprogesterone. This agent is not as effective as GnRH analogs in lowering endogenous sex hormones either and may be associated with other side effects (116). Progestin preparations may be an acceptable treatment for persons without access to GnRH analogs or with a needle phobia. If GnRH analog treatment is not available (insurance denial, prohibitive cost, or other reasons), postpubertal, transgender female adolescents may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see adult section).

Remarks

Measurements of gonadotropin and sex steroid levels give precise information about gonadal axis suppression, although there is insufficient evidence for any specific short-term monitoring scheme in children treated with GnRH analogs (88). If the gonadal axis is not completely suppressed—as evidenced by (for example) menses, erections, or progressive hair growth—the interval of GnRH analog treatment can be shortened or the dose increased. During treatment, adolescents should be monitored for negative effects of delaying puberty, including a halted growth spurt and impaired bone mineral accretion. Table 7 illustrates a suggested clinical protocol.

Anthropometric measurements and X-rays of the left hand to monitor bone age are informative for evaluating growth. To assess BMD, clinicians can perform dual-energy X-ray absorptiometry scans.

- 2.4. In adolescents who request sex hormone treatment (given this is a partly irreversible treatment), we recommend initiating treatment using a gradually increasing dose schedule (see Table 8) after a multidisciplinary team of medical and MHPs has confirmed the persistence of GD/gender incongruence and sufficient mental capacity to give informed consent, which most adolescents have by age 16 years (Table 5). (1 |⊕⊕○○)
- 2.5. We recognize that there may be compelling reasons to initiate sex hormone treatment prior to the age of 16 years in some adolescents with GD/gender incongruence, even though there are minimal published studies of gender-affirming hormone treatments administered before age 13.5 to 14 years. As with the care of adolescents ≥16 years of age, we recommend that an expert multidisciplinary team of medical and MHPs manage this treatment. (1 |⊕○○○)
- 2.6. We suggest monitoring clinical pubertal development every 3 to 6 months and laboratory parameters every 6 to 12 months during sex hormone treatment (Table 9). (2 |⊕⊕○○)

Table 7. Baseline and Follow-Up Protocol During Suppression of Puberty

Every 3–6 mo
Anthropometry: height, weight, sitting height, blood pressure, Tanner stages
Every 6–12 mo
Laboratory: LH, FSH, E2/T, 25OH vitamin D
Every 1–2 y
Bone density using DXA
Bone age on X-ray of the left hand (if clinically indicated)

Adapted from Hembree *et al.* (118).  
Abbreviations: DXA, dual-energy X-ray absorptiometry; E2, estradiol; FSH, follicle stimulating hormone; LH, luteinizing hormone; T, testosterone;

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**Table 8. Protocol Induction of Puberty**

Induction of female puberty with oral 17β-estradiol, increasing the dose every 6 mo:

- 5 μg/kg/d
- 10 μg/kg/d
- 15 μg/kg/d
- 20 μg/kg/d
- Adult dose = 2–6 mg/d

*In postpubertal transgender female adolescents, the dose of 17β-estradiol can be increased more rapidly:*

- 1 mg/d for 6 mo
- 2 mg/d

Induction of female puberty with transdermal 17β-estradiol, increasing the dose every 6 mo (new patch is placed every 3.5 d):

- 6.25–12.5 μg/24 h (cut 25-μg patch into quarters, then halves)
- 25 μg/24 h
- 37.5 μg/24 h
- Adult dose = 50–200 μg/24 h

*For alternatives once at adult dose, see Table 11.*

*Adjust maintenance dose to mimic physiological estradiol levels (see Table 15).*

Induction of male puberty with testosterone esters increasing the dose every 6 mo (IM or SC):

- 25 mg/m<sup>2</sup>/2 wk (or alternatively, half this dose weekly, or double the dose every 4 wk)
- 50 mg/m<sup>2</sup>/2 wk
- 75 mg/m<sup>2</sup>/2 wk
- 100 mg/m<sup>2</sup>/2 wk
- Adult dose = 100–200 mg every 2 wk

*In postpubertal transgender male adolescents the dose of testosterone esters can be increased more rapidly:*

- 75 mg/2 wk for 6 mo
- 125 mg/2 wk

*For alternatives once at adult dose, see Table 11.*

*Adjust maintenance dose to mimic physiological testosterone levels (see Table 14).*

Adapted from Hembree et al. (118).  
Abbreviations: IM, intramuscularly; SC, subcutaneously.

**Evidence**

Adolescents develop competence in decision making at their own pace. Ideally, the supervising medical professionals should individually assess this competence, although no objective tools to make such an assessment are currently available.

Many adolescents have achieved a reasonable level of competence by age 15 to 16 years (119), and in many countries 16-year-olds are legally competent with regard to medical decision making (120). However, others believe that although some capacities are generally achieved before age 16 years, other abilities (such as good risk

assessment) do not develop until well after 18 years (121). They suggest that health care procedures should be divided along a matrix of relative risk, so that younger adolescents can be allowed to decide about low-risk procedures, such as most diagnostic tests and common therapies, but not about high-risk procedures, such as most surgical procedures (121).

Currently available data from transgender adolescents support treatment with sex hormones starting at age 16 years (63, 122). However, some patients may incur potential risks by waiting until age 16 years. These include the potential risk to bone health if puberty is suppressed

**Table 9. Baseline and Follow-up Protocol During Induction of Puberty**

Every 3–6 mo

- Anthropometry: height, weight, sitting height, blood pressure, Tanner stages

Every 6–12 mo

- In transgender males: hemoglobin/hematocrit, lipids, testosterone, 25OH vitamin D
- In transgender females: prolactin, estradiol, 25OH vitamin D

Every 1–2 y

- BMD using DXA
- Bone age on X-ray of the left hand (if clinically indicated)

*BMD should be monitored into adulthood (until the age of 25–30 y or until peak bone mass has been reached).*

*For recommendations on monitoring once pubertal induction has been completed, see Tables 14 and 15.*

Adapted from Hembree et al. (118).  
Abbreviation: DXA, dual-energy X-ray absorptiometry.



for 6 to 7 years before initiating sex hormones (*e.g.*, if someone reached Tanner stage 2 at age 9-10 years old). Additionally, there may be concerns about inappropriate height and potential harm to mental health (emotional and social isolation) if initiation of secondary sex characteristics must wait until the person has reached 16 years of age. However, only minimal data supporting earlier use of gender-affirming hormones in transgender adolescents currently exist (63). Clearly, long-term studies are needed to determine the optimal age of sex hormone treatment in GD/gender-incongruent adolescents.

The MHP who has followed the adolescent during GnRH analog treatment plays an essential role in assessing whether the adolescent is eligible to start sex hormone therapy and capable of consenting to this treatment (Table 5). Support of the family/environment is essential. Prior to the start of sex hormones, clinicians should discuss the implications for fertility (see recommendation 1.5). Throughout pubertal induction, an MHP and a pediatric endocrinologist (or other clinician competent in the evaluation and induction of pubertal development) should monitor the adolescent. In addition to monitoring therapy, it is also important to pay attention to general adolescent health issues, including healthy life style choices, such as not smoking, contraception, and appropriate vaccinations (*e.g.*, human papillomavirus).

For the induction of puberty, clinicians can use a similar dose scheme for hypogonadal adolescents with GD/gender incongruence as they use in other individuals with hypogonadism, carefully monitoring for desired and undesired effects (Table 8). In transgender female adolescents, transdermal 17 $\beta$ -estradiol may be an alternative for oral 17 $\beta$ -estradiol. It is increasingly used for pubertal induction in hypogonadal females. However, the absence of low-dose estrogen patches may be a problem. As a result, individuals may need to cut patches to size themselves to achieve appropriate dosing (123). In transgender male adolescents, clinicians can give testosterone injections intramuscularly or subcutaneously (124, 125).

When puberty is initiated with a gradually increasing schedule of sex steroid doses, the initial levels will not be high enough to suppress endogenous sex steroid secretion. Gonadotropin secretion and endogenous production of testosterone may resume and interfere with the effectiveness of estrogen treatment, in transgender female adolescents (126, 127). Therefore, continuation of GnRH analog treatment is advised until gonadectomy. Given that GD/gender-incongruent adolescents may opt not to have gonadectomy, long-term studies are necessary to examine the potential risks of prolonged GnRH analog treatment. Alternatively, in transgender male adolescents, GnRH analog treatment can be discontinued once an

adult dose of testosterone has been reached and the individual is well virilized. If uterine bleeding occurs, a progestin can be added. However, the combined use of a GnRH analog (for ovarian suppression) and testosterone may enable phenotypic transition with a lower dose of testosterone in comparison with testosterone alone. If there is a wish or need to discontinue GnRH analog treatment in transgender female adolescents, they may be treated with an antiandrogen that directly suppresses androgen synthesis or action (see section 3.0 “Hormonal Therapy for Transgender Adults”).

### Values and preferences

The recommendation to initiate pubertal induction only when the individual has sufficient mental capacity (roughly age 16 years) to give informed consent for this partly irreversible treatment places a higher value on the ability of the adolescent to fully understand and oversee the partially irreversible consequences of sex hormone treatment and to give informed consent. It places a lower value on the possible negative effects of delayed puberty. We may not currently have the means to weigh adequately the potential benefits of waiting until around age 16 years to initiate sex hormones vs the potential risks/harm to BMD and the sense of social isolation from having the timing of puberty be so out of sync with peers (128).

### Remarks

Before starting sex hormone treatment, effects on fertility and options for fertility preservation should be discussed. Adult height may be a concern in transgender adolescents. In a transgender female adolescent, clinicians may consider higher doses of estrogen or a more rapid tempo of dose escalation during pubertal induction. There are no established treatments yet to augment adult height in a transgender male adolescent with open epiphyses during pubertal induction. It is not uncommon for transgender adolescents to present for clinical services after having completed or nearly completed puberty. In such cases, induction of puberty with sex hormones can be done more rapidly (see Table 8). Additionally, an adult dose of testosterone in transgender male adolescents may suffice to suppress the gonadal axis without the need to use a separate agent. At the appropriate time, the multidisciplinary team should adequately prepare the adolescent for transition to adult care.

## 3.0 Hormonal Therapy for Transgender Adults

The two major goals of hormonal therapy are (1) to reduce endogenous sex hormone levels, and thus reduce

the secondary sex characteristics of the individual’s designated gender, and (2) to replace endogenous sex hormone levels consistent with the individual’s gender identity by using the principles of hormone replacement treatment of hypogonadal patients. The timing of these two goals and the age at which to begin treatment with the sex hormones of the chosen gender is codetermined in collaboration with both the person pursuing transition and the health care providers. The treatment team should include a medical provider knowledgeable in transgender hormone therapy, an MHP knowledgeable in GD/gender incongruence and the mental health concerns of transition, and a primary care provider able to provide care appropriate for transgender individuals. The physical changes induced by this sex hormone transition are usually accompanied by an improvement in mental well-being (129, 130).

- 3.1. We recommend that clinicians confirm the diagnostic criteria of GD/gender incongruence and the criteria for the endocrine phase of gender transition before beginning treatment. (1 ⊕⊕⊕⊕)
- 3.2. We recommend that clinicians evaluate and address medical conditions that can be exacerbated by hormone depletion and treatment with sex hormones of the affirmed gender before beginning treatment (Table 10). (1 ⊕⊕⊕⊕)
- 3.3. We suggest that clinicians measure hormone levels during treatment to ensure that endogenous sex steroids are suppressed and administered sex steroids are maintained in the normal physiologic range for the affirmed gender. (2 ⊕⊕⊕⊕)

Evidence

It is the responsibility of the treating clinician to confirm that the person fulfills criteria for treatment. The treating clinician should become familiar with the terms and criteria presented in Tables 1–5 and take a thorough history from the patient in collaboration with the other members of the treatment team. The treating clinician must ensure that the desire for transition is appropriate; the consequences, risks, and benefits of treatment are well understood; and the desire for transition persists. They also need to discuss fertility preservation options (see recommendation 1.3) (67, 68).

Transgender males

Clinical studies have demonstrated the efficacy of several different androgen preparations to induce masculinization in transgender males (Appendix A) (113, 114, 131–134). Regimens to change secondary sex characteristics follow the general principle of hormone replacement treatment of male hypogonadism (135). Clinicians can use either parenteral or transdermal preparations to achieve testosterone values in the normal male range (this is dependent on the specific assay, but is typically 320 to 1000 ng/dL) (Table 11) (136). Sustained supraphysiologic levels of testosterone increase the risk of adverse reactions (see section 4.0 “Adverse Outcome Prevention and Long-Term Care”) and should be avoided.

Similar to androgen therapy in hypogonadal men, testosterone treatment in transgender males results in increased muscle mass and decreased fat mass, increased facial hair and acne, male pattern baldness in those genetically predisposed, and increased sexual desire (137).

Table 10. Medical Risks Associated With Sex Hormone Therapy

Transgender female: estrogen
Very high risk of adverse outcomes:
•Thromboembolic disease
Moderate risk of adverse outcomes:
•Macroprolactinoma
•Breast cancer
•Coronary artery disease
•Cerebrovascular disease
•Cholelithiasis
•Hypertriglyceridemia
Transgender male: testosterone
Very high risk of adverse outcomes:
•Erythrocytosis (hematocrit > 50%)
Moderate risk of adverse outcomes:
•Severe liver dysfunction (transaminases > threefold upper limit of normal)
•Coronary artery disease
•Cerebrovascular disease
•Hypertension
•Breast or uterine cancer

**Table 11. Hormone Regimens in Transgender Persons**

Transgender females <sup>a</sup>	
Estrogen	
Oral	
Estradiol	2.0–6.0 mg/d
Transdermal	
Estradiol transdermal patch	0.025–0.2 mg/d
(New patch placed every 3–5 d)	
Parenteral	
Estradiol valerate or cypionate	5–30 mg IM every 2 wk 2–10 mg IM every week
Anti-androgens	
Spironolactone	100–300 mg/d
Cyproterone acetate <sup>b</sup>	25–50 mg/d
GnRH agonist	3.75 mg SQ (SC) monthly 11.25 mg SQ (SC) 3-monthly
Transgender males	
Testosterone	
Parenteral testosterone	
Testosterone enanthate or cypionate	100–200 mg SQ (IM) every 2 wk or SQ (SC) 50% per week
Testosterone undecanoate <sup>c</sup>	1000 mg every 12 wk
Transdermal testosterone	
Testosterone gel 1.6% <sup>d</sup>	50–100 mg/d
Testosterone transdermal patch	2.5–7.5 mg/d

Abbreviations: IM, intramuscularly; SQ, sequentially; SC, subcutaneously.

<sup>a</sup>Estrogens used with or without antiandrogens or GnRH agonist.

<sup>b</sup>Not available in the United States.

<sup>c</sup>One thousand milligrams initially followed by an injection at 6 wk then at 12-wk intervals.

<sup>d</sup>Avoid cutaneous transfer to other individuals.

In transgender males, testosterone will result in clitoromegaly, temporary or permanent decreased fertility, deepening of the voice, cessation of menses (usually), and a significant increase in body hair, particularly on the face, chest, and abdomen. Cessation of menses may occur within a few months with testosterone treatment alone, although high doses of testosterone may be required. If uterine bleeding continues, clinicians may consider the addition of a progestational agent or endometrial ablation (138). Clinicians may also administer GnRH analogs or depot medroxyprogesterone to stop menses prior to testosterone treatment.

**Transgender females**

The hormone regimen for transgender females is more complex than the transgender male regimen (Appendix B). Treatment with physiologic doses of estrogen alone is insufficient to suppress testosterone levels into the normal range for females (139). Most published clinical studies report the need for adjunctive therapy to achieve testosterone levels in the female range (21, 113, 114, 132–134, 139, 140).

Multiple adjunctive medications are available, such as progestins with antiandrogen activity and GnRH agonists (141). Spironolactone works by directly blocking androgens during their interaction with the androgen

receptor (114, 133, 142). It may also have estrogenic activity (143). Cyproterone acetate, a progestational compound with antiandrogenic properties (113, 132, 144), is widely used in Europe. 5 $\alpha$ -Reductase inhibitors do not reduce testosterone levels and have adverse effects (145).

Dittrich *et al.* (141) reported that monthly doses of the GnRH agonist goserelin acetate in combination with estrogen were effective in reducing testosterone levels with a low incidence of adverse reactions in 60 transgender females. Leuprolide and transdermal estrogen were as effective as cyproterone and transdermal estrogen in a comparative retrospective study (146).

Patients can take estrogen as oral conjugated estrogens, oral 17 $\beta$ -estradiol, or transdermal 17 $\beta$ -estradiol. Among estrogen options, the increased risk of thromboembolic events associated with estrogens in general seems most concerning with ethinyl estradiol specifically (134, 140, 141), which is why we specifically suggest that it not be used in any transgender treatment plan. Data distinguishing among other estrogen options are less well established although there is some thought that oral routes of administration are more thrombogenic due to the “first pass effect” than are transdermal and parenteral routes, and that the risk of thromboembolic events is dose-dependent. Injectable estrogen and sublingual

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estrogen may benefit from avoiding the first pass effect, but they can result in more rapid peaks with greater overall periodicity and thus are more difficult to monitor (147, 148). However, there are no data demonstrating that increased periodicity is harmful otherwise.

Clinicians can use serum estradiol levels to monitor oral, transdermal, and intramuscular estradiol. Blood tests cannot monitor conjugated estrogens or synthetic estrogen use. Clinicians should measure serum estradiol and serum testosterone and maintain them at the level for premenopausal females (100 to 200 pg/mL and <50 ng/dL, respectively). The transdermal preparations and injectable estradiol cypionate or valerate preparations may confer an advantage in older transgender females who may be at higher risk for thromboembolic disease (149).

Values

Our recommendation to maintain levels of gender-affirming hormones in the normal adult range places a high value on the avoidance of the long-term complications of pharmacologic doses. Those patients receiving endocrine treatment who have relative contraindications to hormones should have an in-depth discussion with their physician to balance the risks and benefits of therapy.

Remarks

Clinicians should inform all endocrine-treated individuals of all risks and benefits of gender-affirming hormones prior to initiating therapy. Clinicians should strongly encourage tobacco use cessation in transgender females to avoid increased risk of VTE and cardiovascular complications. We strongly discourage the unsupervised use of hormone therapy (150).

Not all individuals with GD/gender incongruence seek treatment as described (e.g., male-to-eunuchs and individuals seeking partial transition). Tailoring current protocols to the individual may be done within the context of accepted safety guidelines using a multidisciplinary approach including mental health. No evidence-based protocols are available for these groups (151). We need prospective studies to better understand treatment options for these persons.

- 3.4. We suggest that endocrinologists provide education to transgender individuals undergoing treatment about the onset and time course of physical changes induced by sex hormone treatment. (2 ⊕○○○○)

Evidence

Transgender males

Physical changes that are expected to occur during the first 1 to 6 months of testosterone therapy include

cessation of menses, increased sexual desire, increased facial and body hair, increased oiliness of skin, increased muscle, and redistribution of fat mass. Changes that occur within the first year of testosterone therapy include deepening of the voice (152, 153), clitoromegaly, and male pattern hair loss (in some cases) (114, 144, 154, 155) (Table 12).

Transgender females

Physical changes that may occur in transgender females in the first 3 to 12 months of estrogen and anti-androgen therapy include decreased sexual desire, decreased spontaneous erections, decreased facial and body hair (usually mild), decreased oiliness of skin, increased breast tissue growth, and redistribution of fat mass (114, 139, 149, 154, 155, 161) (Table 13). Breast development is generally maximal at 2 years after initiating hormones (114, 139, 149, 155). Over a long period of time, the prostate gland and testicles will undergo atrophy.

Although the time course of breast development in transgender females has been studied (150), precise information about other changes induced by sex hormones is lacking (141). There is a great deal of variability among individuals, as evidenced during pubertal development. We all know that a major concern for transgender females is breast development. If we work with estrogens, the result will be often not what the transgender female expects.

Alternatively, there are transgender females who report an anecdotal improved breast development, mood, or sexual desire with the use of progestogens. However, there have been no well-designed studies of the role of progestogens in feminizing hormone regimens, so the question is still open.

Our knowledge concerning the natural history and effects of different cross-sex hormone therapies on breast

Table 12. Masculinizing Effects in Transgender Males

Effect	Onset	Maximum
Skin oiliness/acne	1–6 mo	1–2 y
Facial/body hair growth	6–12 mo	4–5 y
Scalp hair loss	6–12 mo	— <sup>a</sup>
Increased muscle mass/strength	6–12 mo	2–5 y
Fat redistribution	1–6 mo	2–5 y
Cessation of menses	1–6 mo	— <sup>b</sup>
Clitoral enlargement	1–6 mo	1–2 y
Vaginal atrophy	1–6 mo	1–2 y
Deepening of voice	6–12 mo	1–2 y

Estimates represent clinical observations: Toorians et al. (149), Assche-man et al. (156), Gooren et al. (157), Wierckx et al. (158).

<sup>a</sup>Prevention and treatment as recommended for biological men.

<sup>b</sup>Menorrhagia requires diagnosis and treatment by a gynecologist.

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**Table 13. Feminizing Effects in Transgender Females**

Effect	Onset	Maximum
Redistribution of body fat	3–6 mo	2–3 y
Decrease in muscle mass and strength	3–6 mo	1–2 y
Softening of skin/decreased oiliness	3–6 mo	Unknown
Decreased sexual desire	1–3 mo	3–6 mo
Decreased spontaneous erections	1–3 mo	3–6 mo
Male sexual dysfunction	Variable	Variable
Breast growth	3–6 mo	2–3 y
Decreased testicular volume	3–6 mo	2–3 y
Decreased sperm production	Unknown	>3 y
Decreased terminal hair growth	6–12 mo	>3 y <sup>a</sup>
Scalp hair	Variable	— <sup>b</sup>
Voice changes	None	— <sup>c</sup>

Estimates represent clinical observations: Toorians *et al.* (149), Asscheman *et al.* (156), Gooren *et al.* (157).  
<sup>a</sup>Complete removal of male sexual hair requires electrolysis or laser treatment or both.  
<sup>b</sup>Familial scalp hair loss may occur if estrogens are stopped.  
<sup>c</sup>Treatment by speech pathologists for voice training is most effective.

development in transgender females is extremely sparse and based on the low quality of evidence. Current evidence does not indicate that progestogens enhance breast development in transgender females, nor does evidence prove the absence of such an effect. This prevents us from drawing any firm conclusion at this moment and demonstrates the need for further research to clarify these important clinical questions (162).

**Values and preferences**

Transgender persons have very high expectations regarding the physical changes of hormone treatment and are aware that body changes can be enhanced by surgical procedures (*e.g.*, breast, face, and body habitus). Clear expectations for the extent and timing of sex hormone-induced changes may prevent the potential harm and expense of unnecessary procedures.

**4.0 Adverse Outcome Prevention and Long-Term Care**

Hormone therapy for transgender males and females confers many of the same risks associated with sex hormone replacement therapy in nontransgender persons. The risks arise from and are worsened by inadvertent or intentional use of supraphysiologic doses of sex hormones, as well as use of inadequate doses of sex hormones to maintain normal physiology (131, 139).

- 4.1. We suggest regular clinical evaluation for physical changes and potential adverse changes in response to sex steroid hormones and laboratory monitoring of sex steroid hormone levels every

3 months during the first year of hormone therapy for transgender males and females and then once or twice yearly. (2 ⊕⊕○○)

**Evidence**

Pretreatment screening and appropriate regular medical monitoring are recommended for both transgender males and females during the endocrine transition and periodically thereafter (26, 155). Clinicians should monitor weight and blood pressure, conduct physical exams, and assess routine health questions, such as tobacco use, symptoms of depression, and risk of adverse events such as deep vein thrombosis/pulmonary embolism and other adverse effects of sex steroids.

**Transgender males**

Table 14 contains a standard monitoring plan for transgender males on testosterone therapy (154, 159). Key issues include maintaining testosterone levels in the physiologic normal male range and avoiding adverse events resulting from excess testosterone therapy, particularly erythrocytosis, sleep apnea, hypertension, excessive weight gain, salt retention, lipid changes, and excessive or cystic acne (135).

Because oral 17-alkylated testosterone is not recommended, serious hepatic toxicity is not anticipated with parenteral or transdermal testosterone use (163, 164). Past concerns regarding liver toxicity with testosterone have been alleviated with subsequent reports that indicate the risk of serious liver disease is minimal (144, 165, 166).

**Transgender females**

Table 15 contains a standard monitoring plan for transgender females on estrogens, gonadotropin suppression, or antiandrogens (160). Key issues include avoiding supraphysiologic doses or blood levels of estrogen that may lead to increased risk for thromboembolic disease, liver dysfunction, and hypertension. Clinicians should monitor serum estradiol levels using laboratories participating in external quality control, as measurements of estradiol in blood can be very challenging (167).

VTE may be a serious complication. A study reported a 20-fold increase in venous thromboembolic disease in a large cohort of Dutch transgender subjects (161). This increase may have been associated with the use of the synthetic estrogen, ethinyl estradiol (149). The incidence decreased when clinicians stopped administering ethinyl estradiol (161). Thus, the use of synthetic estrogens and conjugated estrogens is undesirable because of the inability to regulate doses by measuring serum levels and the risk of thromboembolic disease. In a German gender clinic, deep vein thrombosis occurred in 1 of 60 of transgender females treated with a GnRH analog and oral

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**Table 14. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Male**

- 1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of virilization and for development of adverse reactions.
- 2. Measure serum testosterone every 3 mo until levels are in the normal physiologic male range:<sup>a</sup>
  - a. For testosterone enanthate/cypionate injections, the testosterone level should be measured midway between injections. The target level is 400–700 ng/dL to 400 ng/dL. Alternatively, measure peak and trough levels to ensure levels remain in the normal male range.
  - b. For parenteral testosterone undecanoate, testosterone should be measured just before the following injection. If the level is <400 ng/dL, adjust dosing interval.
  - c. For transdermal testosterone, the testosterone level can be measured no sooner than after 1 wk of daily application (at least 2 h after application).
- 3. Measure hematocrit or hemoglobin at baseline and every 3 mo for the first year and then one to two times a year. Monitor weight, blood pressure, and lipids at regular intervals.
- 4. Screening for osteoporosis should be conducted in those who stop testosterone treatment, are not compliant with hormone therapy, or who develop risks for bone loss.
- 5. If cervical tissue is present, monitoring as recommended by the American College of Obstetricians and Gynecologists.
- 6. Ovariectomy can be considered after completion of hormone transition.
- 7. Conduct sub- and periareolar annual breast examinations if mastectomy performed. If mastectomy is not performed, then consider mammograms as recommended by the American Cancer Society.

<sup>a</sup>Adapted from Lapauw *et al.* (154) and Ott *et al.* (159).

estradiol (141). The patient who developed a deep vein thrombosis was found to have a homozygous C677 T mutation in the methylenetetrahydrofolate reductase gene. In an Austrian gender clinic, administering gender-affirming hormones to 162 transgender females and 89 transgender males was not associated with VTE, despite an 8.0% and 5.6% incidence of thrombophilia (159). A more recent multinational study reported only 10 cases of VTE from a cohort of 1073 subjects (168). Thrombophilia screening of transgender persons initiating hormone treatment should be restricted to those with a personal or family history of VTE (159). Monitoring D-dimer levels during treatment is not recommended (169).

4.2. We suggest periodically monitoring prolactin levels in transgender females treated with estrogens. (2 ⊕⊕○○)

**Evidence**

Estrogen therapy can increase the growth of pituitary lactotroph cells. There have been several reports of prolactinomas occurring after long-term, high-dose

estrogen therapy (170–173). Up to 20% of transgender females treated with estrogens may have elevations in prolactin levels associated with enlargement of the pituitary gland (156). In most cases, the serum prolactin levels will return to the normal range with a reduction or discontinuation of the estrogen therapy or discontinuation of cyproterone acetate (157, 174, 175).

The onset and time course of hyperprolactinemia during estrogen treatment are not known. Clinicians should measure prolactin levels at baseline and then at least annually during the transition period and every 2 years thereafter. Given that only a few case studies reported prolactinomas, and prolactinomas were not reported in large cohorts of estrogen-treated persons, the risk is likely to be very low. Because the major presenting findings of microprolactinomas (hypogonadism and sometimes gynecomastia) are not apparent in transgender females, clinicians may perform radiologic examinations of the pituitary in those patients whose prolactin levels persistently increase despite stable or reduced estrogen levels. Some transgender individuals receive psychotropic medications that can increase prolactin levels (174).

**Table 15. Monitoring of Transgender Persons on Gender-Affirming Hormone Therapy: Transgender Female**

- 1. Evaluate patient every 3 mo in the first year and then one to two times per year to monitor for appropriate signs of feminization and for development of adverse reactions.
- 2. Measure serum testosterone and estradiol every 3 mo.
  - a. Serum testosterone levels should be <50 ng/dL.
  - b. Serum estradiol should not exceed the peak physiologic range: 100–200 pg/mL.
- 3. For individuals on spironolactone, serum electrolytes, particularly potassium, should be monitored every 3 mo in the first year and annually thereafter.
- 4. Routine cancer screening is recommended, as in nontransgender individuals (all tissues present).
- 5. Consider BMD testing at baseline (160). In individuals at low risk, screening for osteoporosis should be conducted at age 60 years or in those who are not compliant with hormone therapy.

This table presents strong recommendations and does not include lower level recommendations.

- 4.3. We suggest that clinicians evaluate transgender persons treated with hormones for cardiovascular risk factors using fasting lipid profiles, diabetes screening, and/or other diagnostic tools. (2 ⊕⊕○○)

## Evidence

### *Transgender males*

Administering testosterone to transgender males results in a more atherogenic lipid profile with lowered high-density lipoprotein cholesterol and higher triglyceride and low-density lipoprotein cholesterol values (176–179). Studies of the effect of testosterone on insulin sensitivity have mixed results (178, 180). A randomized, open-label uncontrolled safety study of transgender males treated with testosterone undecanoate demonstrated no insulin resistance after 1 year (181, 182). Numerous studies have demonstrated the effects of sex hormone treatment on the cardiovascular system (160, 179, 183, 184). Long-term studies from The Netherlands found no increased risk for cardiovascular mortality (161). Likewise, a meta-analysis of 19 randomized trials in nontransgender males on testosterone replacement showed no increased incidence of cardiovascular events (185). A systematic review of the literature found that data were insufficient (due to very low-quality evidence) to allow a meaningful assessment of patient-important outcomes, such as death, stroke, myocardial infarction, or VTE in transgender males (176). Future research is needed to ascertain the potential harm of hormonal therapies (176). Clinicians should manage cardiovascular risk factors as they emerge according to established guidelines (186).

### *Transgender females*

A prospective study of transgender females found favorable changes in lipid parameters with increased high-density lipoprotein and decreased low-density lipoprotein concentrations (178). However, increased weight, blood pressure, and markers of insulin resistance attenuated these favorable lipid changes. In a meta-analysis, only serum triglycerides were higher at ≥24 months without changes in other parameters (187). The largest cohort of transgender females (mean age 41 years, followed for a mean of 10 years) showed no increase in cardiovascular mortality despite a 32% rate of tobacco use (161).

Thus, there is limited evidence to determine whether estrogen is protective or detrimental on lipid and glucose metabolism in transgender females (176). With aging, there is usually an increase of body weight. Therefore, as with nontransgender individuals, clinicians should

monitor and manage glucose and lipid metabolism and blood pressure regularly according to established guidelines (186).

- 4.4. We recommend that clinicians obtain BMD measurements when risk factors for osteoporosis exist, specifically in those who stop sex hormone therapy after gonadectomy. (1 ⊕⊕○○)

## Evidence

### *Transgender males*

Baseline bone mineral measurements in transgender males are generally in the expected range for their pre-treatment gender (188). However, adequate dosing of testosterone is important to maintain bone mass in transgender males (189, 190). In one study (190), serum LH levels were inversely related to BMD, suggesting that low levels of sex hormones were associated with bone loss. Thus, LH levels in the normal range may serve as an indicator of the adequacy of sex steroid administration to preserve bone mass. The protective effect of testosterone may be mediated by peripheral conversion to estradiol, both systemically and locally in the bone.

### *Transgender females*

A baseline study of BMD reported T scores less than −2.5 in 16% of transgender females (191). In aging males, studies suggest that serum estradiol more positively correlates with BMD than does testosterone (192, 193) and is more important for peak bone mass (194). Estrogen preserves BMD in transgender females who continue on estrogen and antiandrogen therapies (188, 190, 191, 195, 196).

Fracture data in transgender males and females are not available. Transgender persons who have undergone gonadectomy may choose not to continue consistent sex steroid treatment after hormonal and surgical sex reassignment, thereby becoming at risk for bone loss. There have been no studies to determine whether clinicians should use the sex assigned at birth or affirmed gender for assessing osteoporosis (e.g., when using the FRAX tool). Although some researchers use the sex assigned at birth (with the assumption that bone mass has usually peaked for transgender people who initiate hormones in early adulthood), this should be assessed on a case-by-case basis until there are more data available. This assumption will be further complicated by the increasing prevalence of transgender people who undergo hormonal transition at a pubertal age or soon after puberty. Sex for comparison within risk assessment tools may be based on the age at which hormones were initiated and the length of exposure to hormones. In some cases, it may be

reasonable to assess risk using both the male and female calculators and using an intermediate value. Because all subjects underwent normal pubertal development, with known effects on bone size, reference values for birth sex were used for all participants (154).

- 4.5. We suggest that transgender females with no known increased risk of breast cancer follow breast-screening guidelines recommended for those designated female at birth. (2 ⊕ ⊕ ⊕ ⊕)
- 4.6. We suggest that transgender females treated with estrogens follow individualized screening according to personal risk for prostatic disease and prostate cancer. (2 ⊕ ⊕ ⊕ ⊕)

### Evidence

Studies have reported a few cases of breast cancer in transgender females (197–200). A Dutch study of 1800 transgender females followed for a mean of 15 years (range of 1–30 years) found one case of breast cancer. The Women's Health Initiative study reported that females taking conjugated equine estrogen without progesterone for 7 years did not have an increased risk of breast cancer as compared with females taking placebo (137).

In transgender males, a large retrospective study conducted at the U.S. Veterans Affairs medical health system identified seven breast cancers (194). The authors reported that this was not above the expected rate of breast cancers in cisgender females in this cohort. Furthermore, they did report one breast cancer that developed in a transgender male patient after mastectomy, supporting the fact that breast cancer can occur even after mastectomy. Indeed, there have been case reports of breast cancer developing in subareolar tissue in transgender males, which occurred after mastectomy (201, 202).

Women with primary hypogonadism (Turner syndrome) treated with estrogen replacement exhibited a significantly decreased incidence of breast cancer as compared with national standardized incidence ratios (203, 204). These studies suggest that estrogen therapy does not increase the risk of breast cancer in the short term (<20 to 30 years). We need long-term studies to determine the actual risk, as well as the role of screening mammograms. Regular examinations and gynecologic advice should determine monitoring for breast cancer.

Prostate cancer is very rare before the age of 40, especially with androgen deprivation therapy (205). Childhood or pubertal castration results in regression of the prostate and adult castration reverses benign prostate hypertrophy (206). Although van Kesteren *et al.* (207) reported that estrogen therapy does not induce hypertrophy or premalignant changes in the prostates of

transgender females, studies have reported cases of benign prostatic hyperplasia in transgender females treated with estrogens for 20 to 25 years (208, 209). Studies have also reported a few cases of prostate carcinoma in transgender females (210–214).

Transgender females may feel uncomfortable scheduling regular prostate examinations. Gynecologists are not trained to screen for prostate cancer or to monitor prostate growth. Thus, it may be reasonable for transgender females who transitioned after age 20 years to have annual screening digital rectal examinations after age 50 years and prostate-specific antigen tests consistent with U.S. Preventive Services Task Force Guidelines (215).

- 4.7. We advise that clinicians determine the medical necessity of including a total hysterectomy and oophorectomy as part of gender-affirming surgery. (Ungraded Good Practice Statement)

### Evidence

Although aromatization of testosterone to estradiol in transgender males has been suggested as a risk factor for endometrial cancer (216), no cases have been reported. When transgender males undergo hysterectomy, the uterus is small and there is endometrial atrophy (217, 218). Studies have reported cases of ovarian cancer (219, 220). Although there is limited evidence for increased risk of reproductive tract cancers in transgender males, health care providers should determine the medical necessity of a laparoscopic total hysterectomy as part of a gender-affirming surgery to prevent reproductive tract cancer (221).

### Values

Given the discomfort that transgender males experience accessing gynecologic care, our recommendation for the medical necessity of total hysterectomy and oophorectomy places a high value on eliminating the risks of female reproductive tract disease and cancer and a lower value on avoiding the risks of these surgical procedures (related to the surgery and to the potential undesirable health consequences of oophorectomy) and their associated costs.

### Remarks

The sexual orientation and type of sexual practices will determine the need and types of gynecologic care required following transition. Additionally, in certain countries, the approval required to change the sex in a birth certificate for transgender males may be dependent on having a complete hysterectomy. Clinicians should help patients research nonmedical administrative criteria and



provide counseling. If individuals decide not to undergo hysterectomy, screening for cervical cancer is the same as all other females.

5.0 Surgery for Sex Reassignment and Gender Confirmation

For many transgender adults, genital gender-affirming surgery may be the necessary step toward achieving their ultimate goal of living successfully in their desired gender role. The type of surgery falls into two main categories: (1) those that directly affect fertility and (2) those that do not. Those that change fertility (previously called sex reassignment surgery) include genital surgery to remove the penis and gonads in the male and removal of the uterus and gonads in the female. The surgeries that effect fertility are often governed by the legal system of the state or country in which they are performed. Other gender-conforming surgeries that do not directly affect fertility are not so tightly governed.

Gender-affirming surgical techniques have improved markedly during the past 10 years. Reconstructive genital surgery that preserves neurologic sensation is now the standard. The satisfaction rate with surgical reassignment of sex is now very high (187). Additionally, the mental health of the individual seems to be improved by participating in a treatment program that defines a pathway of gender-affirming treatment that includes hormones and surgery (130, 144) (Table 16).

Surgery that affects fertility is irreversible. The World Professional Association for Transgender Health Standards of Care (222) emphasizes that the “threshold of 18 should not be seen as an indication in itself for active intervention.” If the social transition has not been satisfactory, if the person is not satisfied with or is ambivalent about the effects of sex hormone treatment, or if the person is ambivalent about surgery then the individual should not be referred for surgery (223, 224).

Gender-affirming genital surgeries for transgender females that affect fertility include gonadectomy, penectomy, and creation of a neovagina (225, 226). Surgeons often invert the skin of the penis to form the wall of the vagina, and several literatures reviews have

reported on outcomes (227). Sometimes there is inadequate tissue to form a full neovagina, so clinicians have revisited using intestine and found it to be successful (87, 228, 229). Some newer vaginoplasty techniques may involve autologous oral epithelial cells (230, 231).

The scrotum becomes the labia majora. Surgeons use reconstructive surgery to fashion the clitoris and its hood, preserving the neurovascular bundle at the tip of the penis as the neurosensory supply to the clitoris. Some surgeons are also creating a sensate pedicled-spot adding a G spot to the neovagina to increase sensation (232). Most recently, plastic surgeons have developed techniques to fashion labia minora. To further complete the feminization, uterine transplants have been proposed and even attempted (233).

Neovaginal prolapse, rectovaginal fistula, delayed healing, vaginal stenosis, and other complications do sometimes occur (234, 235). Clinicians should strongly remind the transgender person to use their dilators to maintain the depth and width of the vagina throughout the postoperative period. Genital sexual responsivity and other aspects of sexual function are usually preserved following genital gender-affirming surgery (236, 237).

Ancillary surgeries for more feminine or masculine appearance are not within the scope of this guideline. Voice therapy by a speech language pathologist is available to transform speech patterns to the affirmed gender (148). Spontaneous voice deepening occurs during testosterone treatment of transgender males (152, 238). No studies have compared the effectiveness of speech therapy, laryngeal surgery, or combined treatment.

Breast surgery is a good example of gender-confirming surgery that does not affect fertility. In all females, breast size exhibits a very broad spectrum. For transgender females to make the best informed decision, clinicians should delay breast augmentation surgery until the patient has completed at least 2 years of estrogen therapy, because the breasts continue to grow during that time (141, 155).

Another major procedure is the removal of facial and masculine-appearing body hair using either electrolysis or

Table 16. Criteria for Gender-Affirming Surgery, Which Affects Fertility

1. Persistent, well-documented gender dysphoria
2. Legal age of majority in the given country
3. Having continuously and responsibly used gender-affirming hormones for 12 mo (if there is no medical contraindication to receiving such therapy)
4. Successful continuous full-time living in the new gender role for 12 mo
5. If significant medical or mental health concerns are present, they must be well controlled
6. Demonstrable knowledge of all practical aspects of surgery (e.g., cost, required lengths of hospitalizations, likely complications, postsurgical rehabilitation)

laser treatments. Other feminizing surgeries, such as that to feminize the face, are now becoming more popular (239–241).

In transgender males, clinicians usually delay gender-affirming genital surgeries until after a few years of androgen therapy. Those surgeries that affect fertility in this group include oophorectomy, vaginectomy, and complete hysterectomy. Surgeons can safely perform them vaginally with laparoscopy. These are sometimes done in conjunction with the creation of a neopenis. The cosmetic appearance of a neopenis is now very good, but the surgery is multistage and very expensive (242, 243). Radial forearm flap seems to be the most satisfactory procedure (228, 244). Other flaps also exist (245). Surgeons can make neopenile erections possible by reinnervation of the flap and subsequent contraction of the muscle, leading to stiffening of the neopenis (246, 247), but results are inconsistent (248). Surgeons can also stiffen the penis by imbedding some mechanical device (*e.g.*, a rod or some inflatable apparatus) (249, 250). Because of these limitations, the creation of a neopenis has often been less than satisfactory. Recently, penis transplants are being proposed (233).

In fact, most transgender males do not have any external genital surgery because of the lack of access, high cost, and significant potential complications. Some choose a metaoidioplasty that brings forward the clitoris, thereby allowing them to void in a standing position without wetting themselves (251, 252). Surgeons can create the scrotum from the labia majora with good cosmetic effect and can implant testicular prostheses (253).

The most important masculinizing surgery for the transgender male is mastectomy, and it does not affect fertility. Breast size only partially regresses with androgen therapy (155). In adults, discussions about mastectomy usually take place after androgen therapy has started. Because some transgender male adolescents present after significant breast development has occurred, they may also consider mastectomy 2 years after they begin androgen therapy and before age 18 years. Clinicians should individualize treatment based on the physical and mental health status of the individual. There are now newer approaches to mastectomy with better outcomes (254, 255). These often involve chest contouring (256). Mastectomy is often necessary for living comfortably in the new gender (256).

- 5.1. We recommend that a patient pursue genital gender-affirming surgery only after the MHP and the clinician responsible for endocrine transition therapy both agree that surgery is medically

necessary and would benefit the patient's overall health and/or well-being. (1 ⊕⊕⊕⊕)

- 5.2. We advise that clinicians approve genital gender-affirming surgery only after completion of at least 1 year of consistent and compliant hormone treatment, unless hormone therapy is not desired or medically contraindicated. (Ungraded Good Practice Statement)
- 5.3. We advise that the clinician responsible for endocrine treatment and the primary care provider ensure appropriate medical clearance of transgender individuals for genital gender-affirming surgery and collaborate with the surgeon regarding hormone use during and after surgery. (Ungraded Good Practice Statement)
- 5.4. We recommend that clinicians refer hormone-treated transgender individuals for genital surgery when: (1) the individual has had a satisfactory social role change, (2) the individual is satisfied about the hormonal effects, and (3) the individual desires definitive surgical changes. (1 ⊕⊕⊕⊕)
- 5.5. We suggest that clinicians delay gender-affirming genital surgery involving gonadectomy and/or hysterectomy until the patient is at least 18 years old or legal age of majority in his or her country. (2 ⊕⊕⊕⊕)
- 5.6. We suggest that clinicians determine the timing of breast surgery for transgender males based upon the physical and mental health status of the individual. There is insufficient evidence to recommend a specific age requirement. (2 ⊕⊕⊕⊕)

## Evidence

Owing to the lack of controlled studies, incomplete follow-up, and lack of valid assessment measures, evaluating various surgical approaches and techniques is difficult. However, one systematic review including a large numbers of studies reported satisfactory cosmetic and functional results for vaginoplasty/neovagina construction (257). For transgender males, the outcomes are less certain. However, the problems are now better understood (258). Several postoperative studies report significant long-term psychological and psychiatric pathology (259–261). One study showed satisfaction with breasts, genitals, and femininity increased significantly and showed the importance of surgical treatment as a key therapeutic option for transgender females (262). Another analysis demonstrated that, despite the young average age at death following surgery and the relatively larger number of individuals with somatic morbidity, the study does not allow for determination of

causal relationships between, for example, specific types of hormonal or surgical treatment received and somatic morbidity and mortality (263). Reversal surgery in regretful male-to-female transsexuals after sexual reassignment surgery represents a complex, multistage procedure with satisfactory outcomes. Further insight into the characteristics of persons who regret their decision postoperatively would facilitate better future selection of applicants eligible for sexual reassignment surgery. We need more studies with appropriate controls that examine long-term quality of life, psychosocial outcomes, and psychiatric outcomes to determine the long-term benefits of surgical treatment.

When a transgender individual decides to have gender-affirming surgery, both the hormone prescribing clinician and the MHP must certify that the patient satisfies criteria for gender-affirming surgery (Table 16).

There is some concern that estrogen therapy may cause an increased risk for venous thrombosis during or following surgery (176). For this reason, the surgeon and the hormone-prescribing clinician should collaborate in making a decision about the use of hormones before and following surgery. One study suggests that preoperative factors (such as compliance) are less important for patient satisfaction than are the physical postoperative results (56). However, other studies and clinical experience dictate that individuals who do not follow medical instructions and do not work with their physicians toward a common goal do not achieve treatment goals (264) and experience higher rates of postoperative infections and other complications (265, 266). It is also important that the person requesting surgery feels comfortable with the anatomical changes that have occurred during hormone therapy. Dissatisfaction with social and physical outcomes during the hormone transition may be a contraindication to surgery (223).

An endocrinologist or experienced medical provider should monitor transgender individuals after surgery. Those who undergo gonadectomy will require hormone replacement therapy, surveillance, or both to prevent adverse effects of chronic hormone deficiency.

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**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION**

**B.P.J., by her next friend and mother,  
HEATHER JACKSON,  
Plaintiff,**

**v.**

**Civil Action No. 2:21-cv-00316  
Honorable Joseph R. Goodwin, Judge**

**WEST VIRGINIA STATE BOARD OF EDUCATION,  
HARRISON COUNTY BOARD OF EDUCATION,  
WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISSION, W. CLAYTON BURCH  
in his official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent, PATRICK MORRISEY  
In his official capacity as Attorney General, and THE  
STATE OF WEST VIRGINIA,  
Defendants.**

**CERTIFICATE OF SERVICE**

I hereby certify that I, Roberta F. Green, have this day, the 22<sup>nd</sup> day of November, 2021, served a true and exact copy of *“WVSSAC’s Responses to Plaintiff’s First Set of Interrogatories”* was served on counsel by electronic means:

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**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION**

**B.P.J., by her next friend and mother,  
HEATHER JACKSON,  
Plaintiff,**

**v.**

**Civil Action No. 2:21-cv-00316  
Honorable Joseph R. Goodwin, Judge**

**WEST VIRGINIA STATE BOARD OF EDUCATION,  
HARRISON COUNTY BOARD OF EDUCATION,  
WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISION, W. CLAYTON BURCH  
in his official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent, PATRICK MORRISEY  
In his official capacity as Attorney General, and THE  
STATE OF WEST VIRGINIA,  
Defendants.**

**WVSSAC'S RESPONSES TO PLAINTIFF'S FIRST SET OF INTERROGATORIES**

Now comes West Virginia Secondary School Activities Commission (WVSSAC), by counsel, and responds as follows to Plaintiff's First Set of Interrogatories to Defendant West Virginia Secondary School Activities Commission.

Defendant has not completed discovery in this civil action and has not completed its preparation for trial. For these reasons, the Defendant's responses are based upon only such information and documents as are presently available and known to WVSSAC. Further discovery and independent investigation may supply additional facts, add meaning to facts, or may establish entirely new factual contentions, and, therefore, additions to, changes in, and/or variations from the Defendant's present responses may be necessary or may unavoidably result. The following responses are given in good faith but without prejudice to the Defendant's right to produce evidence of subsequently discovered facts or documents.

The Defendant avails itself of all rights under the Federal Rules of Civil Procedure and such other applicable rules and law, and objects to the instructions contained in Plaintiff's discovery requests to the extent such instructions attempt to impose burdens on the Defendant that are outside the scope of the Rules or the law generally. The Defendant is not bound to follow any instructions which may be contrary to the Rules and other law.

Without waiving the foregoing, the Defendant provides the following responses.

### **INTERROGATORIES**

**INTERROGATORY NO. 1:** Identify all PERSONS who provided information in preparation of YOUR Answer and Motion to Dismiss the First Amended Complaint, and for each such PERSON, state the following:

- (a) Their name, address, and telephone number;
- (b) Their relationship to YOU and/or B.P.J.; and
- (c) A detailed description of such knowledge and/or information

### **RESPONSE:**

Objection; attorney work product, attorney client privilege. Beyond those objections and without waiving same, WVSSAC responds as follows:

- a. Beyond WVSSAC counsel, WVSSAC Executive Director, Bernie Dolan (contact through undersigned counsel).
- b. Executive Director, WVSSAC
- c. Mr. Dolan provided factual information relative to the history, structure and funding of WVSSAC. He further provided information relative to WVSSAC rules, regulations, policies and practices.

**INTERROGATORY NO. 2:** Identify all financial funding YOU received in 2019 to the present. For each identified funding, please state the following:

- (a) Who provided the funding, and
- (b) What the funding was allocated to.

**RESPONSE:**

West Virginia's Secondary School Activities Commission (WVSSAC) receives no dues whatsoever from member schools and has not for more than a decade. WVSSAC sustains itself with corporate sponsorships, advertising revenue and gate proceeds from championship meets and tournaments. WVSSAC's corporate sponsorships, which change over time, from 2019 to the present have included West Virginia Dairy Association/Milk Producers, Farmers & Mechanics, U.S. Army, MetroNews, Midstate Automotive, Field Turf, Spalding, and CareSource.

**INTERROGATORY NO. 3:** Identify all schools that compete in WVSSAC sponsored activities.

**RESPONSE:**

Member schools compete in WVSSAC sponsored activities. Non-member schools can compete in most WVSSAC sponsored activities as long as they are indeed organized as schools. For example, Calvary Baptist Church School and Teays Valley Christian are non-member schools who participate over time. Additionally, Wood County Christian is currently a member but

participated as a non-member prior to joining. WVSSAC has 289 member schools that appear on the WVSSAC website at <https://www.wvssac.org/school-directory/>

**INTERROGATORY NO. 4:** Identify all COMMUNICATIONS, if any, YOU have received from students, teachers, parents, schools, coaches, legislators, or other PERSONS CONCERNING B.P.J.

**RESPONSE:**

Bridgeport Middle School's eligibility list was posted per the Rules on the WVSSC website.

**INTERROGATORY NO. 5:** Identify all COMMUNICATIONS if any, YOU have received from students, teachers, parents, schools, coaches, legislators, or other PERSONS CONCERNING students who are transgender participating in school sports of any level in West Virginia.

**RESPONSE:**

WVSSAC received one inquiry two years ago directly from an athlete with a male birth gender interested in volleyball and considering female gender purportedly to be eligible to play volleyball. WVSSAC heard nothing further. More recently, WVSSAC had one inquiry from a transgender athlete with a female birth gender. *See also* more generally response to interrogatory numbered 7.

**INTERROGATORY NO. 6:** Identify the number of students who are transgender that YOU are aware of who play or have played school sports in West Virginia, and for each student, please specify the sport(s) played by the student and current school level of that student.

**RESPONSE:**

On information and belief and as reflected in instant pleadings, BPJ (cross country at Bridgeport Middle School). WVSSAC has no knowledge of other transgender participants. However, given that WVSSAC's policies and practices are gender neutral, it would have no reason to know of other transgender athletes unless contacted by the athlete or the school.

**INTERROGATORY NO. 7:** Identify all PERSONS YOU communicated with CONCERNING H.B. 3293 and the date and content of the COMMUNICATION.

**RESPONSE:**

In late March 2021, Mr. Dolan received texts from Senator Baldwin, asking him to appear before the Senate Democratic Caucus. Mr. Dolan was asked to appear to 'discuss the transgender athlete bill.' Also referenced at regional principal's meetings at ten locations across West Virginia from July 28 to August 12, 2021.

**INTERROGATORY NO. 8:** Identify all PERSONS responsible for creating, enforcing, and monitoring YOUR policies for school athletics.

**RESPONSE:**

The Board of Control is where member schools vote on proposals and create the rules and regulations, which are approved by the State Board of Education and then enforced and monitored by the schools. WVSSAC becomes involved in instances of disputes or appeals.

**INTERROGATORY NO. 9:** Identify all steps YOU have taken to contemplate, prepare for, monitor, implement, and/or enforce POLICIES and rules CONCERNING the implementation of H.B. 3293.

**RESPONSE:**

None.

**INTERROGATORY NO. 10:** Identify all PERSONS responsible for determining student eligibility on sports teams under YOUR POLICIES for school athletics.

**RESPONSE:**

All of the member schools.

In the instance of disputes, Executive Director Bernie Dolan, Assistant Executive Director Greg Reed, Assistant Executive Director Wayne Ryan, Assistant Executive Director Dr. Cindy Daniels.

**INTERROGATORY NO. 11:** Identify all YOUR public and private school members, and for each such member state whether they are public or private.



**RESPONSE:**

WVSSAC has 289 member schools identified here (private schools underlined), which schools also appear on the WVSSAC website at <https://www.wvssac.org/school-directory/>

Andrew Jackson Middle – Kanawha Co. (Cross Lanes, WV); Aurora School – Preston Co. (Aurora, WV); Baileysville Elementary – Wyoming Co. (Brenton, WV); Barboursville Middle – Cabell Co. (Barboursville, WV); Barrackville Middle – Marion Co. (Barrackville, WV); Beckley-Stratton Middle School – Raleigh Co. (Beckley, WV); Belington Middle – Barbour Co. (Belington, WV); Berkeley Springs – Morgan Co. (Berkeley Springs, WV); Blennerhassett Middle School – Wood Co. (Parkersburg, WV); Bluefield – Mercer Co. (Bluefield, WV); Bluefield Middle School – Mercer Co. (Bluefield, WV); Braxton County – Braxton Co. (Sutton, WV); Braxton County Middle – Braxton Co. (Sutton, WV); Bridge Street Middle – Ohio Co. (Wheeling, WV); Bridgeport Middle – Harrison Co. (Bridgeport, WV); Bridgeport Senior High School – Harrison Co. (Bridgeport, WV); Brooke High School – Brooke Co. (Wellsburg, WV); Brooke Middle School – Brooke Co. (Wellsburg, WV); Bruceton School – Preston Co. (Bruceton Mills, WV); Buckhannon-Upshur – Upshur Co. (Buckhannon, WV); Buckhanon-Upshur Middle – Upshur Co. (Buckhannon, WV); Buffalo – Putnam Co. (Buffalo, WV); Buffalo Middle – Wayne Co. (Kenova, WV); Burch Middle School – Mingo Co. (Delbarton, WV); Cabell Midland – Cabell Co. (Ona, WV); Calhoun County Middle/High School – Calhoun Co. (Mt. Zion, WV); Cameron – (Cameron, WV); Capital High School – Kanawha Co. (Charleston, WV); Capon Bridge Middle – Hampshire Co. (Capon Bridge, WV); Cedar Grove Middle School – Kanawha Co. (Cedar Grove, WV); Central Preston Middle School – Preston Co. (Kingwood, WV); Ceredo-Kenova Middle – Wayne Co. (Ceredo, WV); Chapmanville Middle – Logan Co. (Chapmanville, WV); Chapmanville Regional High School – Logan Co. (Chapmanville, WV); Charles Town Middle School – Jefferson Co. (Charles Town, WV); Charleston Catholic – Kanawha Co. (Charleston, WV); Clay County High School – Clay Co. (Clay, WV); Clay County Middle – Clay Co. (Clay, WV); Clay Battelle – Monongalia Co. (Blacksville, WV); Covenant Christian School – Monongalia Co. (Morgantown, WV); Crum Middle – Wayne Co. (Crum, WV); Davis Thomas Elementary Middle – Tucker Co. (Thomas, WV); Doddridge County – Doddridge Co. (West Union, WV); Doddridge County Middle – Doddridge Co. (West Union, WV); Dunbar Middle – Kanawha Co. (Dunbar, WV); Dupont Middle – Kanawha Co. (Belle, WV); Duval Middle School – Lincoln Co. (Griffithsville, WV); East Bank Middle – Kanawha Co. (East Bank, WV); East Fairmont – Marion Co. (Fairmont, WV); East Fairmont Middle School - Marion Co. (Fairmont, WV); East Hardy – Hardy Co. (Baker, WV); East Hardy Early Middle – Hardy Co. (Baker, WV); Eastern Greenbrier Middle School – Greenbrier Co. (Ronceverte, WV); Edison Middle School – Wood Co. (Parkersburg, WV); Elkins – Randolph Co. (Elkins, WV); Elkins Middle – Randolph Co. (Elkins, WV); Elkview Middle – Kanawha Co. (Elkview, WV); Enoch High School; Fairmont Catholic Jr. High – Marion Co. (Fairmont, WV); Fairmont Senior High School – Marion Co. (Fairmont, WV); Fairview Middle – Marion Co. (Fairview, WV); Fayetteville Pre K-8 – Fayette Co. (Fayetteville, WV); Fort Gay Pre K-8 – Wayne Co. (Fort Gay, WV); Frankfort – Mineral Co. (Ridgeley, WV); Frankfort Middle – Mineral Co. (Ridgeley, WV); Geary Middle School – Roane Co. (Left Hand, WV); George Washington

– Kanawha Co. (Charleston, WV); George Washington Middle School – Putnam Co. (Eleanor, WV); Gilbert Middle School – Mingo Co. (Gilbert, WV); Gilmer County – Gilmer Co. (Glenville, WV); Glen Fork Middle – Wyoming Co. (Glen Fork, WV); Glenwood School – Mercer Co. (Princeton, WV); Grafton – Taylor Co. (Grafton, WV); Greater Beckley Christian – Raleigh Co. (Prosperity, WV); Green Bank Middle – Pocahontas Co. (Green Bank, WV); Greenbrier East – Greenbrier Co. (Lewisburg, WV); Greenbrier West – Greenbrier Co. (Charmco, WV); Guyan Valley Middle School – Lincoln Co. (Branchland, WV); Hamilton Middle School – Wood Co. (Parkersburg, WV); Hamlin Middle School – Lincoln Co. (Hamlin, WV); Hampshire – Hampshire Co. (Romney, WV); Hannan Senior/Middle School – Mason Co. (Ashton, WV); Harman – Randolph Co. (Harman, WV); Harpers Ferry Middle School – Jefferson Co. (Harpers Ferry, WV); Harts PK-8 – Lincoln Co. (Harts, WV); Hayes Middle School – Kanawha Co. (St. Albans, WV); Hedgesville Middle – Berkeley Co. (Hedgesville, WV); Hedgesville Senior High School – Berkeley Co. (Hedgesville, WV); Herbert Hoover – Kanawha Co. (Elkview, WV); Herndon Consolidated – Wyoming Co. (Bud, WV); Horace Mann Middle School – Kanawha Co. (Charleston, WV); Huff Consolidated Middle School – Wyoming Co. (Hanover, WV); Hundred – Wetzel Co. (Hundred, WV); Huntington – Cabell Co. (Huntington, WV); Huntington East Middle – Cabell Co. (Huntington, WV); Huntington Middle School – Cabell Co. (Huntington, WV); Hurricane – Putnam Co. (Hurricane, WV); Hurricane Middle – Putnam Co. (Hurricane, WV); Independence Middle School – Raleigh Co. (Sophia, WV); Independence Senior – Raleigh Co. (Coal City, WV); Jackson Middle School – Wood Co. (Vienna, WV); James Monroe – Monroe Co. (Lindside, WV); Jefferson – Jefferson Co. (Shenandoah Junction, WV); John Adams Middle School – Kanawha Co. (Charleston, WV); John Marshall – Marshall Co. (Glen Dale, WV); Kasson Middle School – Barbour Co. (Moatsville, WV); Kermit Area – Mingo Co. (Kermit, WV); Keyser – Mineral Co. (Keyser, WV); Keyser Primary/Middle – Mineral Co. (Keyser, WV); Lenore K-8 – Mingo Co. (Williamson, WV); Lewis County – Lewis Co. (Weston, WV); Liberty (Harrison) – Harrison Co. (Clarksburg, WV); Liberty – Raleigh Co. (Glen Daniel, WV); Lincoln – Harrison Co. (Shinnston, WV); Lincoln County High School – Lincoln Co. (Hamlin, WV); Lincoln Middle School – Harrison Co. (Shinnston, WV); Logan – Logan Co. (Logan, WV); Logan Middle School – Logan Co. (Logan, WV); Long Drain Middle – Wetzel Co. (Metz, WV); Madison Middle – Boone Co. (Madison, WV); Madonna – Hancock Co. (Weirton, WV); Magnolia High School – Wetzel Co. (New Martinsville, WV); Man High School – Logan Co. (Man, WV); Man Middle School – Logan Co. (Mallory, WV); Mannington Middle – Marion Co. (Mannington, WV); Marlinton Middle – Pocahontas Co. (Buckeye, WV); Martinsburg – Berkeley Co. (Martinsburg, WV); Martinsburg South Middle – Berkeley Co. (Martinsburg, WV); Matewan – Mingo Co. (Matewan, WV); McKinley Middle School – Kanawha Co. (St. Albans, WV); Meadow Bridge High – Fayette Co. (Meadow Bridge, WV); Midland Trail High School – Fayette Co. (Hico, WV); Milton Middle – Cabell Co. (Milton, WV); Mingo Central – Mingo Co. (Delbarton, WV); Monongah Middle – Marion Co. (Monongah, WV); Montcalm – Mercer Co. (Rock, WV); Moorefield – Hardy Co. (Moorefield, WV); Moorefield Middle – Hardy Co. (Moorefield, WV); Morgantown – Monongalia Co. (Morgantown, WV); Moundsville Middle School – Marshall Co. (Moundsville, WV); Mount View High School – McDowell Co. (Welch, WV); Mount View Middle School – McDowell Co. (Welch, WV); Mountain Ridge Middle School – Berkeley Co. (Gerrardstown, WV); Mountain View Middle School – Monroe Co. (Union, WV); Mountaineer (M) Middle – Monongalia Co. (Morgantown, WV); Mountaineer Middle School – Harrison Co. (Clarksburg, WV); Mullens

Middle – Wyoming Co. (Mullens, WV); Musselman – Berkeley Co. (Inwood, WV); Musselman Middle – Berkeley Co. (Bunker Hill, WV); New Martinsville Middle – Wetzel Co. (New Martinsville, WV); Nicholas County – Nicholas Co. (Summersville, WV); Nitro – Kanawha Co. (Nitro, WV); North Marion – Marion Co. (Farmington, WV); North Middle – Berkeley Co. (Martinsburg, WV); Notre Dame – Harrison Co. (Clarksburg, WV); Oak Glen High School – Hancock Co. (New Cumberland, WV); Oak Glen Middle – (New Cumberland, WV); Oak Hill – Fayette Co. (Oak Hill, WV); Oak Hill Middle – Fayette Co. (Oak Hill, WV);

Oceana Middle – Wyoming Co. (Oceana, WV); Our Lady of Fatima Parish School – Cabell Co. (Huntington, WV); Paden City High School – Wetzel Co. (Paden City, WV); Park Middle – Raleigh Co. (Beckley, WV); Parkersburg – Wood Co. (Parkersburg, WV); Parkersburg Catholic – Wood Co. (Parkersburg, WV); Parkersburg South – Wood Co. (Parkersburg, WV); Paw Paw – Morgan Co. (Paw Paw, WV); Pendleton County – Pendleton Co. (Franklin, WV); Petersburg – Grant Co. (Petersburg, WV); Peterstown Middle – Monroe Co. (Peterstown, WV); Philip Barbour High School – Barbour Co. (Philippi, WV); Philippi Middle – Barbour Co. (Philippi, WV); Pickens School; Pikeview – Mercer Co. (Princeton, WV); Pikeview Middle School – Mercer Co. (Princeton, WV); Pineville Middle – Wyoming Co. (Pineville, WV); Pleasants County Middle School – Pleasants Co. (Belmont, WV); Poca – Kanawha Co. (Poca, WV); Poca Middle – Kanawha Co. (Poca, WV); Pocahontas County – Pocahontas Co. (Dunmore, WV); Point Pleasant Senior/Middle School – Mason Co. (Point Pleasant, WV); Preston High School – Preston Co. (Kingwood, WV); Princeton Middle School – Mercer Co. (Princeton, WV); Princeton Senior – Mercer Co. (Princeton, WV); Ravenswood – Jackson Co. (Ravenswood, WV); Ravenswood Middle – Jackson Co. (Ravenswood, WV); Richwood – Nicholas Co. (Craigsville, WV); Richwood Middle School – Nicholas Co. (Richwood, WV); Ripley – Jackson Co. (Ripley, WV); Ripley Middle – Jackson Co. (Ripley, WV); Ritchie County – Ritchie Co. (Ellenboro, WV); Ritchie County Middle – Ritchie Co. (Ellenboro, WV); River View – McDowell Co. (Bradshaw, WV); Riverside – Kanawha Co. (Belle, WV); Rivesville Middle – Marion Co. (Rivesville, WV); Road Branch Jr. High – Wyoming Co. (Cyclone, WV); Roane County – Roane Co. (Spencer, WV); Robert C. Byrd – Harrison Co. (Clarksburg, WV); Robert L. Bland Middle – Lewis Co. (Weston, WV); Romney Middle – Hampshire Co. (Romney, WV); Rowlesburg School – Preston Co. (Rowlesburg, WV); Saint Joseph Central – Cabell Co. (Huntington, WV); Saint Joseph School – Berkeley Co. (Martinsburg, WV); Sandy River Middle School – McDowell Co. (Avondale, WV); Scott – Boone Co. (Madison, WV); Shady Spring – Raleigh Co. (Shady Spring, WV); Shady Spring Middle School – Raleigh Co. (Shady Spring, WV); Shepherdstown Middle School – Jefferson Co. (Shepherdstown, WV); Sherman – Boone Co. (Seth, WV); Sherman Junior High School – Boone Co. (Seth, WV); Sherrard Middle School – Marshall Co. (Wheeling, WV); Short Line Middle – Wetzel Co. (Reader, WV); Sissonville – Kanawha Co. (Charleston, WV); Sissonville Middle – Kanawha Co. (Charleston, WV); South Charleston – Kanawha Co. (South Charleston, WV); South Charleston Middle School – Kanawha Co. (South Charleston, WV); South Harrison – Harrison Co. (Lost Creek, WV); South Harrison Middle School – Harrison Co. (Lost Creek, WV); South Middle – Monongalia Co. (Morgantown, WV); South Preston School – Preston Co. (Tunnelton, WV); Southside School – McDowell Co. (War, WV); Spencer Middle – Roane Co. (Spencer, WV); Spring Mills High School – Berkeley Co. (Martinsburg, WV); Spring Mills Middle – Berkeley Co. (Martinsburg, WV); Spring Valley – Wayne Co. (Huntington, WV); St. Albans High School – Kanawha Co. (St. Albans, WV); St. Francis Central Middle School – Monongalia Co. (Morgantown, WV); St. Francis Desales



School – Raleigh Co. (Beckley, WV); St. Mary's – Pleasants Co. (St. Mary's, WV); St. Patrick School – Lewis Co. (Weston, WV); Stonewall-Jackson Middle School – Kanawha Co. (Charleston, WV); Summers County High School – Summers Co. (Hinton, WV); Summers Middle School – Summers Co. (Hinton, WV); Summersville Middle School – Nicholas Co. (Summersville, WV); Suncrest Middle – Monongalia Co. (Morgantown, WV); Taylor County Middle – Taylor Co. (Grafton, WV); Terra Alta East Preston – Preston Co. (Terra Alta, WV); Tolsia – Wayne Co. (Fort Gay, WV); Trap Hill Middle – Raleigh Co. (Glen Daniel, WV); Trialelphia Middle School – Ohio Co. (Wheeling, WV); Trinity Christian School – Monongalia Co. (Morgantown, WV); Tucker County – Tucker Co. (Hambleton, WV); Tucker Valley Middle – Tucker Co. (Hambleton, WV); Tug Valley – Mingo Co. (Williamson, WV); Tygarts Valley Middle/Senior High – Randolph Co. (Mill Creek, WV); Tyler Consolidated – Tyler Co. (Sistersville, WV); Tyler Consolidated Middle – Tyler Co. (Sistersville, WV); Union – Grant Co. (Mt. Storm, WV); University – Monongalia Co. (Morgantown, WV); Valley (Fayette) – Fayette Co. (Smithers, WV); Valley (Wetzel) – Wetzel Co. (Pine Grove, WV); Valley Pre K-8 – Fayette Co. (Smithers, WV); Van Senior/Middle School – (Van, WV); Vandevender Middle School – Wood Co. (Parkersburg, WV); Vinson Middle School – Wayne Co. (Huntington, WV); Wahama Senior/Middle School – Mason Co. (Mason, WV); Walton Middle – Roane Co. (Walton, WV); Warm Springs Middle – Morgan Co. (Berkeley Springs, WV); Warwood Middle – Ohio Co. (Wheeling, WV); Washington High School – Jefferson Co. (Charles Town, WV); Washington-Irving Middle – Harrison Co. (Clarksburg, WV); Wayne – Wayne Co. (Wayne, WV); Wayne Middle – Wayne Co. (Wayne, WV); Webster County High School – Webster Co. (Upper Glade, WV); Weir – Hancock Co. (Weirton, WV); Weir Middle – Hancock Co. (Weirton, WV); West Fairmont Middle School – Marion Co. (Fairmont, WV); West Preston Middle School – Preston Co. (Arthurdale, WV); Western Greenbrier Middle School – Greenbrier Co. (Crawley, WV); Westside – Wyoming Co. (Clear Fork, WV); Westwood Middle – Monongalia Co. (Morgantown, WV); Wheeling Central Catholic – Ohio Co. (Wheeling, WV); Wheeling Middle – Ohio Co. (Wheeling, WV); Wheeling Park – Ohio Co. (Wheeling, WV); Middle School – Jefferson Co. (Shenandoah Junction, WV); Williamson Pre K-8 – Mingo Co. (Williamson, WV); Williamstown – Wood Co. (Williamstown, WV); Winfield – Putnam Co. (Winfield, WV); Winfield Middle – Putnam Co. (Winfield, WV); Wirt County – Wirt Co. (Elizabeth, WV); Wirt County Middle – Wirt Co. (Elizabeth, WV); Wood County Christian – Wood Co. (Williamstown, WV); Woodrow Wilson – Raleigh Co. (Beckley, WV); WV School for the Blind – Hampshire Co. (Romney, WV); WV School for the Deaf – Hampshire Co. (Romney, WV); Wyoming East – Wyoming Co. (New Richmond, WV)

**INTERROGATORY NO. 12:** Identify each member of YOUR governing board. For each member, please state the following:

- (a) Their name, address, and telephone number;
- (b) Their role; and

(c) A detailed description of how they were selected.

**RESPONSE:**

WVSSAC has a Board of Control and a Board of Directors. As set out in 127 CSR -1-5, the administration of the WVSSAC shall be vested in a Board of Control. The Board of Control shall determine the regulation of interscholastic athletic and band activities among the schools represented by the members of the Commission and shall have charge of all Commission funds, and in order to expedite the regulations of activities shall delegate and assign to the Board of Directors hereinafter constituted, and the Executive Director, hereinafter constituted, and working through the Board of Directors, authority to interpret and enforce these regulations.

Five members of the Board of Directors are elected from the Board of Control, while two are appointment, all as set out in 127 CSR 1-6, detailing appointment and voting protocols. *See Mayo v. WVSSAC*, 223 W. Va. 88, 672 S.E.2d 224 (2008). The current Board members (who should be contacted through undersigned counsel) are as follows:

- **Region 1 Member** – Gregory Moore, Principal, **President**
- **Region 2 Member** – David Cottrell, Principal
- **Region 3 Member** – Michael Kelley, Principal, **Vice President**
- **Region 4 Member** – Jimmy Frashier, Principal
- **Region 5 Member** – Craig Lee Loy, Principal
  
- **Member** – Steve Campbell, Athletic Directors Association
- **Member** – Dr. Eddie Campbell, County Superintendents
- **Member** – Jim Crawford, County Boards of Education
- **Member** – Robert Dunlevy, WV State Superintendent Designee
- **Member** – Dr. James Wilson, WV State Board of Education

Board members should be contacted through undersigned counsel.

**INTERROGATORY NO. 13:** Identify all employees, contractors, or other personnel affiliated with YOU who maintain records CONCERNING B.P.J. and describe the general nature of those records.

**RESPONSE:**

On information and belief, member school Bridgeport Middle School's eligibility form.

**WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISSION,  
By Counsel.**

***/S/ Roberta F. Green***

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Roberta F. Green (WVSB #6598)  
Kimberly M. Bandy (WVSB #10081)  
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1411 Virginia Street East, Suite 200 (25301)  
Charleston, WV 25339  
(304) 345-1400  
(304) 343-1826 FAX  
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[kbandy@shumanlaw.com](mailto:kbandy@shumanlaw.com)

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother,  
HEATHER JACKSON,  
Plaintiff,

v.

Civil Action No. 2:21-cv-00316  
Honorable Joseph R. Goodwin, Judge

WEST VIRGINIA STATE BOARD OF EDUCATION,  
HARRISON COUNTY BOARD OF EDUCATION,  
WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISSION, W. CLAYTON BURCH  
in his official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent, PATRICK MORRISEY  
In his official capacity as Attorney General, and THE  
STATE OF WEST VIRGINIA,  
Defendants.

VERIFICATION

STATE OF WEST VIRGINIA;

COUNTY OF WOOD, to-wit:

Bernie Dolan, being first duly sworn, upon his oath does hereby depose and say that he has read the answers to interrogatories in the foregoing and believes that the facts contained therein, except insofar as they are stated to be upon information and belief, are believed to be true; that the responses set forth herein, subject to inadvertent and undiscovered errors, are based on and therefore necessarily limited by the records and information in existence, presently recollected and thus far discovered in the course of the preparation of these responses; that consequently, he reserves the right to make any changes in the responses if it appears at any time that omissions or errors have been made therein or that more accurate information is available; and that subject to the limitations set forth herein, said responses are true to the best of his knowledge, information and belief.

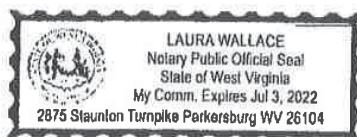
By: Bernie Dolan  
Bernie Dolan

Taken, subscribed and sworn to before me this 22 day of November, 2021.

My commission expires: July 3, 2022.

Laura Wallace  
Notary Public

[SEAL]



IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J, by her next friend and mother, HEATHER JACKSON

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF EDUCATION, HARRISON COUNTY BOARD OF EDUCATION, WEST VIRGINIA SECONDARY SCHOOL ACTIVITIES COMMISSION, W. CLAYTON BURCH in his official capacity as State Superintendent, DORA STUTLER in her official capacity as Harrison County Superintendent, and THE STATE OF WEST VIRGINIA

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

Case No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**INTERVENOR LAINY ARMISTEAD'S  
FIRST SUPPLEMENTAL DISCLOSURES PURSUANT TO RULE 26(A)(1)**

Pursuant to Fed. R. Civ. P. 26(a)(1), Intervenor Lainy Armistead submits her first supplemental disclosures.

**I. Individuals likely to have discoverable information.**

Armistead discloses the following individuals likely to have discoverable information that may be used to support her claims.

1. Lainy Armistead  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Lainy Armistead may have discoverable information pertaining to the facts and



issues set forth within Intervenor Lainey Armistead's Memorandum in Support of Her Motion for Intervene, including, but not limited to, Armistead's experiences playing soccer growing up, the several benefits of participating in a team sport, her experience in competing at the collegiate level against female athletes, and the expected impact competing against males would have, on her and others.

2. B.P.J.  
c/o Loree Stark  
American Civil Liberties Union of West Virginia Foundation  
P.O. Box 3952  
Charleston, WV 25339-3952  
(914) 393-4614

B.P.J. is likely to have discoverable information pertaining to this case, including, but not limited to the allegations within Plaintiff's First Amended Complaint.

3. Heather Jackson  
c/o Loree Stark  
American Civil Liberties Union of West Virginia Foundation  
405 Capitol Street  
Suite 507  
Charleston, WV 25301  
(914) 393-4614

Heather Jackson is likely to have discoverable information pertaining to this case, including, but not limited to the allegations within Plaintiff's First Amended Complaint.

4. Person Most Knowledgeable  
West Virginia State Board of Education  
c/o Kelly C. Morgan  
c/o Kristen Vickers Hammond  
c/o Michael W. Taylor  
Bailey & Wyant  
P.O. Box 3710  
Charleston, WV 25337-3710

The person most knowledgeable of the West Virginia State Board of Education is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of West Virginia Code § 18-2-25d ("the Sports Act"),

and policies of West Virginia State Board of Education.

5. Person Most Knowledgeable  
Harrison County Board of Education  
c/o Susah L. Deniker  
Steptoe & Johnson  
400 White Oaks Blvd.  
Bridgeport, WV 26330

The person most knowledgeable of the Harrison County Board of Education is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of Harrison County Board of Education.

6. Person Most Knowledgeable  
West Virginia Secondary School Activities Commission  
c/o Anthony E. Nortz  
Shuman McCusky & Slicer  
P.O. Box 3952  
Charleston, WV 25339

The person most knowledgeable of the West Virginia Secondary School Activities Commission is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of West Virginia Secondary School Activities Commission.

7. W. Clayton Burch, in his capacity of State Superintendent  
c/o Kelly C. Morgan  
c/o Kristen Vickers Hammond  
c/o Michael W. Taylor  
Bailey & Wyant  
P.O. Box 3710  
Charleston, WV 25337-3710

Mr. Burch is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of and as State Superintendent.

8. Dora Stutler, in her official capacity as Harrison County Superintendent  
c/o Susah L. Deniker  
Steptoe & Johnson

400 White Oaks Blvd.  
Bridgeport, WV 26330

Dora Stutler is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of and as Harrison County Superintendent.

9. Patrick Morrissey, in his official capacity as Attorney General  
c/o Curtis R. Capehart  
WV Attorney General's Office  
Building 1, Room 26e  
1900 Kanawa Boulevard, East  
Charleston, WV 25305

Mr. Morrissey is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of and as Attorney General.

10. Person Most Knowledgeable  
The State of West Virginia  
c/o Curtis R. Capehart  
WV Attorney General's Office  
Building 1, Room 26e  
1900 Kanawa Boulevard, East  
Charleston, WV 25305

The person most knowledgeable of the State of West Virginia is likely to have discoverable information pertaining to general matters relating to this case, including the adoption of the Sports Act, and policies of the State of West Virginia.

11. Selina Soule  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Selina Soule may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against two male athletes in girls' high school track and field, and the impact it had on her and other female competitors.

12. Chelsea Mitchell  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Chelsea Mitchell may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against two male athletes in girls' high school track and field, and the impact it had on her and other female competitors.

13. Christina Mitchell  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Christina Mitchell may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, her daughter's experience competing against male athletes in girls' high school track and field, and the impact it had on her and other female competitors.

14. Alanna Smith  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Alanna Smith may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in girls' high school track and field, and the impact it had on her and other female competitors.

15. Linnea Saltz  
4114 Davis Place, Northwest, Unit 207  
Washington DC 20007  
(702) 523-0545

Linnea Saltz may have discoverable information pertaining to the facts and issues set

forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in girls' college track and field, and the impact it had on her, and other female competitors.

16. Margaret O'Neal  
917 Kana Place  
Lahaina, Hawaii 96761  
(808) 280-4423

Margaret O'Neal may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the deflating experience of competing against a male athlete in girls' high school track and field, and the impact it had on her and other female competitors.

17. Cynthia Monteleone  
917 Kana Place  
Lahaina, Hawaii 96761  
(808) 280-4423

Cynthia Monteleone may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, her daughter's experience of competing against a male athlete in girls' high school track and field, and the impact it had on her and other female competitors.

18. Madison Kenyon  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Madison Keyon may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in women's college track and field and cross-country and the impact it had on her, and other female competitors.

///

19. Mary Kate Marshall  
c/o Christiana Holcomb  
Alliance Defending Freedom  
440 First Street NW, Suite 600  
Washington, DC 20001  
(202) 393-8690

Mary Kate Marshall may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in women's college track and field and cross-country and the impact it had on her, and other female competitors.

20. Darcy Aschoff  
540 W. 700 South,  
Lehi Utah, 84043  
(702) 769-4287

Darcy Aschoff may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, her daughters' experience competing against a male athlete in girls' high school volleyball and the impact it had on her daughters and other female competitors.

21. Female athletes on the University of Pennsylvania women's swimming and diving team  
University of Pennsylvania  
Philadelphia, PA 19104  
215-898-5000

Female swimmers on the University of Pennsylvania swimming and diving team may have discoverable information pertaining to the facts issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in women's collegiate swimming and the impact it had on them and other female competitors.

///

22. Haley Tanne  
current address unknown  
(801) 796-3235

Haley Tanne may have discoverable information pertaining to the facts and issues set forth in this case, including the benefits of competing in girls-only sports, the experience of competing against a male athlete in women's college track and field and cross-country and the impact it had on her, and other female competitors.

23. The following girls and women may have discoverable information pertaining to the facts issues set forth in this case, including the benefits of competing in female-only sports, the experience of competing against a male athlete in women's sports and the impact it had on them and other female competitors. The contact information for these girls and women is unknown.

- Anna Cameron, [College of Siskiyous](#) in 2012
- Shyanna Ashworth, [College of the Siskiyous](#) in 2012
- Brianne Burnside, [College of the Siskiyous](#) in 2012
- Carrie Watson, [College of the Siskiyous](#) in 2012
- Hailey Wales, [College of the Siskiyous](#) in 2012
- Mariia Rachiteleva, [Los Angeles THC Women in 2022](#)
- Katiana Sladanha, [Los Angeles THC Women in 2022](#)
- Patricia Fernandez, [Los Angeles THC Women in 2022](#)
- Sabrina Mcgauran, [Los Angeles THC Women in 2022](#)
- Natallia Zhelnova, [Los Angeles THC Women in 2022](#)
- Robyn Hargrove, competed in [2011 Border States Classic](#)
- Maikayla Malaspina, [Northern AZ women's track & field team](#) in 2020
- Malaina Thacker, [Idaho State women's track & field team](#) in 2020
- Molly Olsen, [Idaho State women's track & field team](#) in 2020
- Pipi Eitel, [Northern Arizona women's track & field team](#) in 2020

- Dawn Orwick, competed in [Masters Track World Championship](#) in 2019
- Kristen Herup Sovange, competed in [Masters Track World Championship](#) in 2019
- Kanani Lodge, [2022 DLS World Rankings](#)
- Katie Calderon, [2022 DLS World Rankings](#)
- Tamikka Brents, MMA fighter in 2014
- Heather Bassett, [XFO 50: Xtreme Fighting Organization 50](#)
- Ashlee Evans-Smith, [CFA 12: Championship Fighting Alliance 12](#)
- Allanna Jones, [CFA 11: Kyle v Wiuff](#)
- Erika Newsome, [CFA: 10 McSweeney vs. Staring](#)

## **II. Documents and tangible items.**

Armistead points to L.Armistead\_\_000001-000169 and the forthcoming Defendants' expert reports, and reserves the right to rely on documents produced by the other parties in this case to support her claims and defenses.

## **III. Computation of damages.**

Armistead seeks an award of attorneys' fees pursuant to 42 U.S.C. §1988. Armistead reserves the right to supplement this response.

## **IV. Insurance Agreements.**

Not applicable.



Dated this 11th day of February, 2022.

*/s/ Brandon S. Steele*

---

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*\*Visiting Attorneys  
Attorneys for Defendant-Intervenor*

**TRANSGENDER POLICY****WVSSAC BOARD OF DIRECTORS**

In the event a member school, or its governing authority, determines to permit transgender students to participate in interscholastic athletics, the WVSSAC has adopted the following policy to govern such participation:

**I.****Definitions**

*Transgender Student* – a student whose gender identity differs from the student's assigned sex at birth.

*Gender Identity* – a person's deeply-felt internal sense of being male or female.

**II.****WVSSAC Transgender Student Policy**

A Transgender Student shall be eligible to participate in interscholastic athletics in a manner consistent with a member school policy that meets the minimum standards designated by the WVSSAC Board of Directors policy.

The WVSSAC Board of Directors has designated the following as the minimum standards a member school must consider when determining whether a transgender student may participate in interscholastic athletics in a particular sport. A separate determination shall be made by the member school for each sport in which the student seeks to participate.

1. The transgender student's school shall make the initial determination as to whether a student may participate in interscholastic athletics in a gender that does not match the gender assigned to him or her at birth. When determining whether a transgender student is eligible to participate in interscholastic athletics in a manner consistent with the student's gender identity a member school must consider the following:
  - a. Whether the student is a "transgender student" as determined based upon applicable regulations and policies of the member school or its governing authority.
  - b. Whether the student meets all applicable academic and enrollment eligibility requirements.
  - c. Whether fair competition among high school teams would be impacted by the student's participation.
2. The determination of a student's gender assignment for interscholastic athletics shall remain in effect for the duration of the student's high school eligibility.
3. Any member school may appeal the eligibility of a transgender student on the grounds that the student's participation in interscholastic athletics would adversely affect competitive equity or safety of teammates or opposing players.
  - a. Any such appeal will be heard by the WVSSAC Board of Directors.
  - b. The identity of the student shall remain confidential. All discussion and documentation will be kept confidential and the proceedings will also be confidential unless the student and family make a specific request otherwise.
  - c. The WVSSAC Board of Directors will not consider whether the school has properly determined the student's sex assignment. The board's deliberations will be limited to the question of whether the transgender student represents a threat to competitive equity or the safety of teammates or opposing players. Factors to be considered will include, but not be limited to, the age of the student; the athletic experience of the student; the degree to which the student presents a risk of harm to other competitors due to his or her strength, size, or speed; the nature of the sport; and the degree to which fair competition among high school teams would be impacted by the student's participation.

# **THE RULES AND REGULATIONS**

of the

## **West Virginia Secondary School Activities Commission**

as set forth in the

## **Constitution and Bylaws**

and

**Approved by the West Virginia State Board of Education**

**Published by**

## **THE BOARD OF DIRECTORS**

of

**The West Virginia Secondary School Activities Commission**

**REVISED AND PRINTED AUGUST 2020**

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VI

**CONSTITUTION AND BYLAWS COMMITTEE**

**TRENT SHERMAN**, Principal  
Martinsburg High School  
Martinsburg, West Virginia

**JEFF SOLE**, Principal  
St. Marys High School  
St. Marys, West Virginia

**STEVE WAMSLEY**, Principal  
Tygarts Valley High School  
Mill Creek, West Virginia

**MIKE COLLINS**, Principal  
Bluefield High School  
Bluefield, West Virginia

**JASON MARLING**, Principal  
Sherrard Middle School  
Wheeling, West Virginia

**BOARD OF TRUSTEES**

**KENT YOHO**

Tyler Consolidated High School

**VACANT**

**RON REEDY**

Sissonville High School

**KENNY DEMOSS**

Parkersburg High School

**HOLLY KLOEPPNER**

Musselman High School

**DISCRIMINATION PROHIBITED:** As required by federal laws and regulations, the West Virginia Secondary School Activities Commission does not discriminate on the basis of sex, race, color, religion, handicapping condition, marital status, or national origin to employment or in its programs and activities. Inquiries may be referred to Bernie Dolan, Executive Director, 2875 Staunton Turnpike, Parkersburg, WV 26104. NOTE: State and Federal laws include Title IX, Education Amendments of 1972; Title VI, Civil Rights Act of 1964; Title VII, Civil Rights Act of 1964; Rehabilitation Act of 1973, Section 504; and other State and Federal laws and regulations governing students and employees.

**BELIEFS AND OBJECTIVES**

The Commission believes that a controlled activities program is a strong factor in the development of courage, personality, cooperation, and leadership. The Commission believes that representatives of a school should be good citizens of that school, hence the need for requirements and regulations governing eligibility that have been standardized.

The Commission is designed to provide means for the unbiased and amicable settlement of disputes regarding activities.

The Commission seeks to present proper ideals of sportsmanship so that coaches, players, school authorities, game officials, and spectators may combine to make any activity enjoyable and productive of physical and social benefits to both sides involved in the contest, with partisanship and prejudice eliminated as far as possible.

To accomplish these objectives the Commission asks the cooperation of its members, all lovers of clean, wholesome activities, and all fans, young and old, who believe in our American system of interscholastics.

**HISTORICAL SKETCH**

The West Virginia High School Athletic Association was organized June 17, 1916, during a meeting of the West Virginia State Education Association. The original draft of the Constitution and Bylaws as formulated by Mr. R.J. Gorman, Charleston, West Virginia, was submitted to the principals of the high schools by Principal W.C. McKee of Charleston High School.

The charter members were Bluefield, Charleston, Clarksburg (Washington Irving), Elkins, Fairmont West,

WVSSAC000017

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother, HEATHER  
JACKSON,

*Plaintiff,*

v.

Civil Action No. 2:21-cv-00316  
Hon. Joseph R. Goodwin, District Judge

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent,  
DORA STUTLER in her official capacity as  
Harrison County Superintendent, PATRICK  
MORRISEY in his official capacity as Attorney  
General, and THE STATE OF WEST VIRGINIA,

*Defendants.*

**DEFENDANTS HARRISON COUNTY BOARD OF EDUCATION  
AND DORA STUTLER'S RESPONSES AND OBJECTIONS TO PLAINTIFF'S FIRST  
SET OF REQUESTS FOR PRODUCTION TO DEFENDANTS  
HARRISON COUNTY BOARD OF EDUCATION AND DORA STUTLER**

Pursuant to Rule 34 of the Federal Rules of Civil Procedure, Defendants Harrison County Board of Education and Dora Stutler (collectively, the "County Board Defendants"), by counsel, hereby respond and object to "Plaintiff's First Set of Request for Production to Defendants Harrison County Board of Education and Dora Stutler" as follows:

**GENERAL OBJECTION:** The County Board Defendants object to the definitions of "County Board" and "County Superintendent" as set forth in Plaintiff's request for production of documents. Those definitions are overly broad and outside the permissible scope of discovery under the Federal Rules of Civil Procedure as the definitions improperly broaden the identity of parties in this case. For instance, the definitions of the "County Board" and the "County

1. National Federation of State High School Associations' Rules Book, Track and Field and Cross Country (2020), Bates numbered HCBOE 00001 to HCBOE 00051, attached as "Exhibit 1."
2. National Federation of State High School Association, "Track and Field & Cross Country Rules Changes," (Feb. 10, 2021), Bates numbered HCBOE 00052 to HCBOE 00053, attached as "Exhibit 2."
3. West Virginia Secondary School Activities Commission Handbook (2021-2022). This source is available online at <https://www.wvssac.org/rules-and-regulations>.
4. "2020 – 2021 Track Coaches Packet." This document is already in the record, at Doc. No. 47-1.
5. West Virginia Secondary School Activities Commission's "Athletic Participation/Parental Consent/Physician's Certificate Form" and accompanying documents. These documents are already in the record, at Doc. No. 47-2.

With regard to the various education records related to B.P.J. that were identified in the County Board Defendants' Rule 26(a) initial disclosures, the County Board Defendants have provided a proposed "FERPA Consent to Release Student Information" form to Plaintiff's counsel. After the County Board Defendants receive a signed version of that FERPA Consent form, the County Board Defendants will supplement their response to this request by providing the various education records that were identified in the County Board Defendants' Rule 26(a) initial disclosures.

**DAUBERT RESPONSE APPENDIX TO  
DEFENDANT-INTERVENOR AND THE STATE OF  
WEST VIRGINIA'S JOINT MEMORANDUMS IN  
RESPONSE TO PLAINTIFF'S MOTIONS TO  
EXCLUDE EXPERTS' TESTIMONY**



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# European normative values for physical fitness in children and adolescents aged 9–17 years: results from 2 779 165 Eurofit performances representing 30 countries

Grant R Tomkinson,<sup>1,2</sup> Kevin D Carver,<sup>1</sup> Frazer Atkinson,<sup>1</sup> Nathan D Daniell,<sup>2</sup> Lucy K Lewis,<sup>2,3</sup> John S Fitzgerald,<sup>1</sup> Justin J Lang,<sup>4</sup> Francisco B Ortega<sup>5,6</sup>

► Additional material is published online only. To view please visit the journal online (<http://dx.doi.org/10.1136/bjsports-2017-098253>).

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30 November 2017

## ABSTRACT

**Objective** To develop sex-specific and age-specific normative values for the nine Eurofit tests in European children and adolescents aged 9–17 years.

**Methods** A systematic review was undertaken to identify papers that explicitly reported descriptive results for at least one of nine Eurofit tests (measuring balance, muscular strength, muscular endurance, muscular power, flexibility, speed, speed-agility and cardiorespiratory fitness (CRF)) on children and adolescents. Data were included on apparently healthy (free from known disease/injury) children and adolescents aged 9–17 years. Following harmonisation for methodological variation where appropriate, pseudodata were generated using Monte Carlo simulation, with population-weighted sex-specific and age-specific normative centiles generated using the Lambda Mu Sigma (LMS) method. Sex-specific and age-specific differences were expressed as standardised differences in means, with the percentage of children and adolescents with healthy CRF estimated at the sex-age level.

**Results** Norms were displayed as tabulated centiles and as smoothed centile curves for the nine Eurofit tests. The final dataset included 2 779 165 results on children and adolescents from 30 European countries, extracted from 98 studies. On average, 78% of boys (95% CI 72% to 85%) and 83% of girls (95% CI 71% to 96%) met the standards for healthy CRF, with the percentage meeting the standards decreasing with age. Boys performed substantially (standardised differences >0.2) better than girls on muscular strength, muscular power, muscular endurance, speed-agility and CRF tests, but worse on the flexibility test. Physical fitness generally improved at a faster rate in boys than in girls, especially during the teenage years.

**Conclusion** This study provides the largest and most geographically representative sex-specific and age-specific European normative values for children and adolescents, which have utility for health and fitness screening, profiling, monitoring and surveillance.

## BACKGROUND

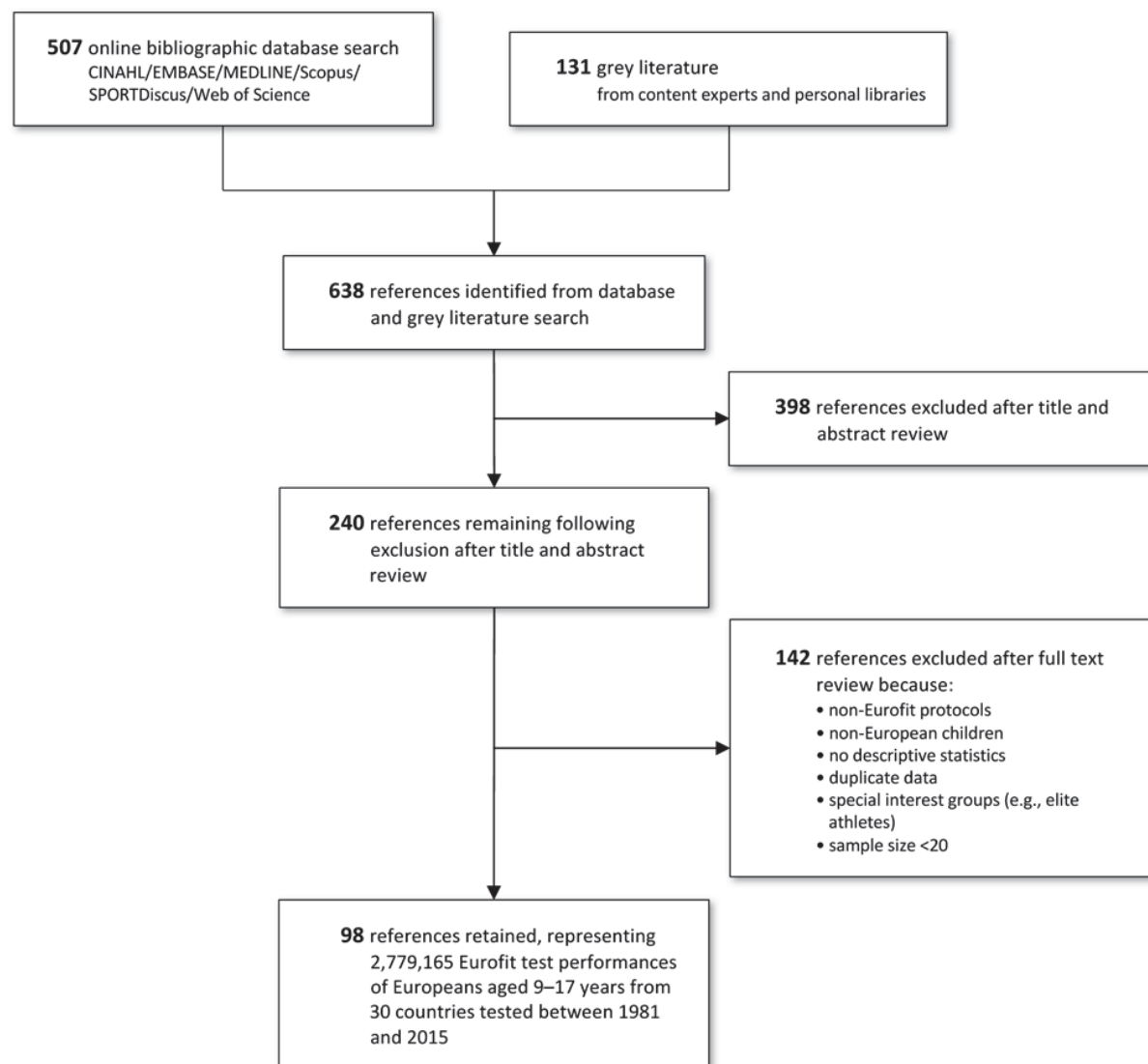
Physical fitness is a good summative measure of the body's ability to perform physical activity and exercise, and it also provides an important summative indicator of health.<sup>1</sup> In adults, cardiorespiratory fitness (CRF) and musculoskeletal fitness (MSF) are strongly associated with mortality and cancer, independent of obesity and

physical activity levels.<sup>2–5</sup> Several studies have shown considerably stronger inverse relationships between CRF and mortality than between physical activity and mortality,<sup>6–7</sup> indicating that changes in CRF may be more important to monitor in response to intervention (eg, exercise training). In children and adolescents, favourable associations have been reported linking CRF and MSF to cardiometabolic disease risk, adiposity, mental health and cognition as well as MSF to bone health.<sup>1–8–10</sup> Direct evidence has also emerged indicating that low CRF and MSF in adolescence are significantly associated with all-cause mortality later in life.<sup>11–13</sup> In addition to the health implications, physical fitness is an important determinant of success for many popular youth sports and athletic events (eg, hockey, basketball, football (soccer), running, swimming, rugby).<sup>14</sup>

Since its inception in 1988, the Eurofit has become the most popular test battery used to assess the physical fitness of European children and adolescents and the effectiveness of national physical education curricula.<sup>15–16</sup> The Eurofit comprises numerous health-related and skill-related fitness tests, including: (1) flamingo balance (balance), plate tapping (upper body speed), sit-and-reach (extent flexibility), standing broad jump (lower body muscular power), handgrip strength (upper body muscular strength), sit-ups (abdominal muscular endurance), bent arm hang (upper body muscular endurance), 10×5 m agility shuttle run (running speed-agility) and the 20 m shuttle run (CRF) (see online supplement 1); (2) anthropometric tests measuring height, mass and skinfold (various sites) and (3) age-identification and sex-identification data.<sup>17</sup> The Eurofit has excellent field-based utility because it is cheap and simple to administer, is practical in the school and club settings, requires minimal equipment and personnel and is appropriate for mass testing.<sup>16</sup> The Eurofit tests demonstrate very good test-retest reliability and good criterion validity for tests where appropriate criterion measures have been identified (eg, the 20 m shuttle run, standing broad jump, handgrip strength),<sup>18–21</sup> suggesting that it is a good test battery to measure physical fitness in youth. Criterion-referenced standards have also been developed for some Eurofit tests (eg, CRF) to help identify children and adolescents with apparently healthy cardiometabolic



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**Figure 1** PRISMA flow chart outlining the flow of studies through the review.

profiles.<sup>22,23</sup> Several of the Eurofit tests have been supported by European experts from the ALPHA (Assessing Levels of Physical Activity) project<sup>20</sup> and by North American experts from the IOM (Institute of Medicine) report,<sup>24</sup> both of which provide strong and consistent guidelines about fitness testing in children and adolescents.

In order to extend the utility of the Eurofit as a surveillance instrument, there is a clear need for European normative-referenced standards to help interpret test scores, which are currently only available at the local, state/provincial or national level.<sup>25–29</sup> Previously, Tomkinson *et al*<sup>16</sup> used a method to match and compare Eurofit data in children and adolescents by standardising differences in test protocols and performance metrics. These data helped describe the geographical variability in the Eurofit performance of 1.2 million European children and adolescents aged 7–18 years from 23 countries,<sup>16</sup> and could be updated to provide European norms. Thus, the primary aim of this study was to develop sex-specific and age-specific normative values for physical fitness in European children and adolescents using the Eurofit, which implies a 10-year update to the previous

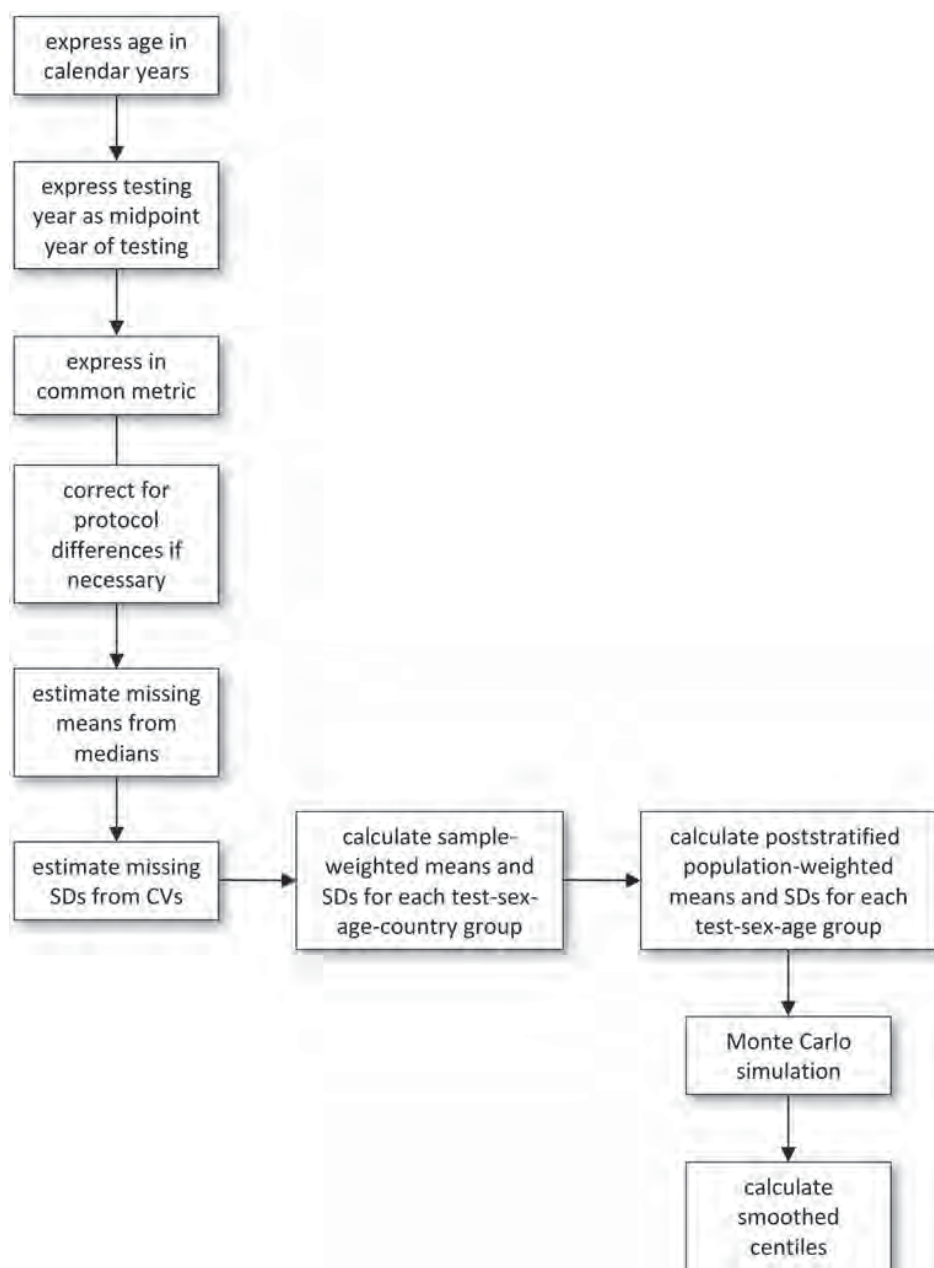
Tomkinson *et al* review.<sup>16</sup> The secondary aim was to estimate the sex-related differences in Eurofit test performance as well as the percentage of European children and adolescents meeting the new international criterion-referenced standards for healthy CRF.<sup>23</sup>

## METHODS

### Data sources

A systematic review of the scientific literature was prospectively registered (PROSPERO 2013:CRD42013003646) and completed to locate studies that reported descriptive Eurofit data on European children and adolescents aged 9–17 years (see online supplement 2). This review was undertaken according to the Preferred Reporting Items for Systematic review and Meta-Analysis (PRISMA) guidelines for systematic reviews.<sup>30</sup> Studies were identified from January 1988 up until December 2016 using the following bibliographic databases: CINAHL, EMBASE, MEDLINE, Scopus, SPORTDiscus and Web of Science. This search strategy was developed by the author group





**Figure 2** Flow chart showing the methodological procedure used in this study. Results from studies were first expressed in a common metric and corrected for protocol differences. Following the estimation of missing means and SDs if necessary, poststratified population-weighted means and SDs were estimated for each test-sex-age group, with pseudodata and smoothed centiles subsequently generated. CV, coefficient of variation.

in conjunction with a trained academic librarian. The search strategy included the term: Eurofit; with child\*, OR adolescen\*, OR youth, OR boy\*, OR girl\*, OR teen\*, OR paediatric\*, OR pediatric\*, as search term modifiers. All studies were extracted as text files, imported into RefWorks (ProQuest, Ann Arbor, Michigan, USA) and assigned a unique reference identification number. Duplicate studies were first removed using RefWorks with the remaining duplicates removed manually. Two independent reviewers screened all titles and abstracts for eligibility, with full-text copies obtained for all studies meeting initial screening criteria according to at least one reviewer. These two independent reviewers then examined all full-text articles and discrepancies

were resolved by discussion and consensus. A third reviewer examined an article when the two reviewers were unable to reach consensus, with consensus reached for all included articles. Email contact with the corresponding authors of studies occurred when necessary, in order to provide clarification, to avoid 'double counting' previously reported data and/or to request additional descriptive or raw data. The reference lists of all included studies were manually reviewed by two reviewers to identify new studies. Reviewers contacted content experts to obtain grey literature. In addition, the personal libraries of the authors were examined for relevant studies not identified through the search strategy.



**Figure 3** European map indicating the 30 countries (filled in black) for which Eurofit data on children and adolescents aged 9–17 years were available.

#### Inclusion/exclusion criteria

Studies were included if they explicitly reported descriptive Eurofit data at the test-sex-age-country-year level. Study participants must have been apparently healthy (free from known disease or injury) European children and adolescents aged 9–17 years who were tested from 1981 onwards—the inception year of the provisional Eurofit test battery. Studies were excluded if they reported descriptive Eurofit data on: (1) test-sex-age-country-year groups for which the sample size was less than 20 (because the means and SDs for smaller samples were too labile); (2) duplicate data published in another included study or (3) on only special interest groups that were atypical of their source population (eg, elite athletes, physically or mentally impaired children). [Figure 1](#) shows a PRISMA flow chart of the included studies.

#### Data treatment and statistical analysis

All descriptive data were extracted into Excel (Microsoft Office 2010, USA) using a standardised data extraction table. The following descriptive data were extracted by one author and checked for accuracy by another: authors, country of testing, year of testing, sex, age, Eurofit test (including data on the name of test, measurement units, sample size, mean, SD and median), sampling method and the sampling base. Mean data were examined for anomalies by running range checks and examining sex-specific and age-specific scatter plots, with means  $\pm$  2SEs of the mean away from the respective sex-age-test level mean identified and checked for transcription errors. Only data on children and adolescents aged 9–17 years were retained for further analysis.

The general procedure used to generate the sex-specific and age-specific normative centiles from extracted data is described elsewhere<sup>31</sup> and summarised in [figure 2](#). Age was reported as age at last birthday (70% or 69/98 studies), a span of years (6% or 6/98 studies) or as mean and SD years (24% or 23/98 studies). Testing year was recorded as the midpoint year of testing (47% or 46/98 studies), a span of testing years (38% or 37/98 studies) or not reported at all (15% or 15/98 studies). Age and testing

year were therefore expressed as age at last birthday and the midpoint year of testing, respectively.<sup>31</sup>

To combine data from different studies, all Eurofit data were standardised to a common metric and protocol. Measurement units reported in the Eurofit handbook<sup>17</sup> were used as the test-specific common metrics and for the presentation of normative centiles. All 20 m shuttle run data were standardised to Léger's 1-min protocol,<sup>32</sup> which starts at a speed of 8.5 km/hour and increases by 0.5 km/hour each minute and the speed at the last completed stage using the procedures described elsewhere.<sup>31 33</sup> The accuracy of the 20 m shuttle run data standardisation procedure is excellent.<sup>33</sup>

As part of the modelling procedure used to generate sex-specific and age-specific norms, means and SDs were required at the study-test-sex-age-country-year level. If no mean was available (1% or 1/98 studies), then mean values were estimated from the reported median values. This was done by first locating all studies reporting both median and mean values at the study-test-sex-age-country-year level and second, by determining the best-fitting and most parsimonious linear or curvilinear (second-order and third-order polynomials) regression models between median (predictor variable) and mean (response variable) values. Furthermore, 4% (4/98) of studies did not report SD values. Missing SD values were estimated by first locating all studies reporting both means and SDs at the study-test-sex-age-country-year level; second, by calculating the corresponding coefficient of variation (CV) values and third, by calculating the sample-weighted mean CVs for boys and girls separately.

Sample-weighted means and SDs (the latter calculated from sample-weighted mean CVs) were then calculated at the test-sex-age-country level. While these data represent the best available Eurofit data, in order to best generate European representative sex-specific and age-specific normative centiles and to correct for systematic bias associated with oversampling and undersampling, means and SDs were corrected using a poststratification population-weighting procedure.<sup>34</sup> This procedure ensures that our norms were standardised to underlying country-sex-age demographics. Thus, population estimates standardised to the mean testing year of 2000 were extracted from the United Nations World Population Prospects report.<sup>35</sup> Monte Carlo simulation was then used to create pseudodata using the detailed methods described elsewhere.<sup>36</sup> This simulation procedure attempts to 'recreate' the unavailable raw data by using a random number generator to produce data points based on population-weighted means and SDs at the sex-age level. Monte Carlo simulation assumes that the distributions are approximately normal, which was not true of all available raw Eurofit data. The simulation procedure described by Tomkinson *et al*<sup>36</sup> however allowed for the recreation of both normal and non-normal pseudodata, with Eurofit data considered to be either normal or non-normal following the assessment of normality by the d'Agostino-Pearson  $K^2$  test<sup>37</sup> using available raw data of the same test. Pseudo-datasets were repeatedly generated until the calculated mean differed from the reported mean by  $<0.5\%$ , and the calculated SD differed from the reported SD by  $<2.5\%$ . These pseudo-datasets were then used to generate sex-specific and age-specific normative centiles in LMSchartmaker Pro (V.2.43, The Institute of Child Health, London, UK), which analyses data using the Lambda Mu Sigma (LMS) method.<sup>38</sup> The LMS method fits smooth centile curves to reference data by summarising the changing distribution of three sex-specific and age-specific curves representing the skewness (L; expressed as a Box-Cox power), the median (M) and the CV (S). Using penalised likelihood, the curves can be fitted as cubic splines using non-linear regression, and the extent

**Table 1** Flamingo balance (n/60s) centiles by age and sex based on 123 655 test performances of children and adolescents aged 9–17 years representing 19 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	3691	24	21	18	15	13	12	10	9	7	5	4
10	5140	25	22	18	16	14	12	10	8	7	5	3
11	6409	26	22	18	16	14	12	10	8	7	4	3
12	8313	26	23	18	16	14	12	10	8	7	4	3
13	8750	26	23	18	16	14	12	10	8	6	4	3
14	9466	25	21	18	15	13	11	10	8	6	4	3
15	7605	21	18	15	13	11	10	9	7	6	4	3
16	6665	21	18	15	13	11	10	8	7	6	4	3
17	5940	21	18	15	13	11	10	8	7	6	4	3
Girls												
9	3654	23	20	17	14	13	11	10	8	7	5	3
10	4935	23	20	17	15	13	11	10	8	7	5	3
11	6247	24	20	17	15	13	11	10	8	7	5	3
12	8271	24	21	17	15	13	11	10	8	7	5	3
13	8958	23	20	17	15	13	11	10	8	7	5	3
14	9279	23	20	16	14	13	11	10	8	7	5	3
15	7956	21	18	15	13	12	10	9	8	6	4	3
16	6644	19	17	14	12	11	9	8	7	6	4	3
17	5732	18	16	13	12	10	9	8	7	5	4	3

Note: the ages shown represent age at last birthday (eg, 9=9.00–9.99).

of smoothing required can be expressed in terms of smoothing parameters or equivalent df.<sup>39</sup>

The percentage of children and adolescents with healthy CRF (ie, healthy cardiometabolic profiles) was estimated using the new international criterion-referenced standards of 42 and 35 mL/kg/min for boys and girls, respectively.<sup>23</sup> Sex-specific differences in mean Eurofit performance were expressed as standardised differences. Positive differences indicated that Eurofit performances for boys were better than those for girls. Standardised

differences of 0.2, 0.5 and 0.8 were used as thresholds for small, moderate and large effect sizes (ES), respectively.<sup>40</sup>

## RESULTS

The final dataset included 2 779 165 Eurofit test performances of European children and adolescents aged 9–17 years (6458 study-sex-age-country-year groups extracted from 98 studies), representing 30 countries (figure 3). These 30 countries

**Table 2** Plate tapping (s) centiles by age and sex based on 148 093 test performances of children and adolescents aged 9–17 years representing 19 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	7543	24.05	22.04	20.00	18.74	17.78	16.96	16.21	15.48	14.70	13.73	13.02
10	9090	21.55	19.90	18.19	17.13	16.31	15.61	14.97	14.33	13.65	12.80	12.17
11	8198	19.48	18.11	16.68	15.77	15.07	14.46	13.90	13.35	12.75	12.00	11.44
12	9799	17.91	16.74	15.51	14.72	14.10	13.57	13.07	12.58	12.05	11.37	10.87
13	9104	16.44	15.44	14.37	13.69	13.15	12.68	12.25	11.81	11.34	10.74	10.28
14	9964	15.12	14.26	13.34	12.74	12.27	11.86	11.48	11.09	10.67	10.13	9.72
15	7797	14.00	13.25	12.45	11.92	11.51	11.14	10.80	10.45	10.07	9.59	9.22
16	7217	13.38	12.70	11.95	11.46	11.08	10.74	10.42	10.10	9.74	9.29	8.94
17	6157	13.11	12.45	11.73	11.26	10.89	10.56	10.25	9.94	9.59	9.15	8.82
Girls												
9	7121	25.25	22.05	19.29	17.77	16.70	15.83	15.06	14.34	13.60	12.72	12.09
10	8904	22.35	19.95	17.77	16.54	15.64	14.90	14.25	13.62	12.97	12.19	11.63
11	8561	19.93	18.11	16.38	15.38	14.63	14.01	13.45	12.91	12.35	11.66	11.16
12	10 089	18.41	16.96	15.53	14.68	14.04	13.50	13.01	12.53	12.03	11.41	10.95
13	9031	16.92	15.76	14.60	13.89	13.35	12.88	12.46	12.05	11.60	11.05	10.64
14	9476	15.51	14.58	13.63	13.03	12.57	12.18	11.81	11.45	11.06	10.58	10.21
15	7690	14.95	14.12	13.25	12.70	12.28	11.91	11.57	11.24	10.87	10.41	10.07
16	6790	14.58	13.80	12.99	12.48	12.07	11.73	11.41	11.08	10.74	10.30	9.97
17	5562	14.54	13.77	12.96	12.45	12.05	11.71	11.39	11.07	10.72	10.28	9.95

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Original article

**Table 3** Sit-and-reach (cm) centiles by age and sex based on 464807 test performances of children and adolescents aged 9–17 years representing 27 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	34495	6.0	8.1	10.7	12.7	14.4	16.0	17.6	19.4	21.4	24.3	26.8
10	35532	6.0	8.1	10.8	12.7	14.4	16.1	17.7	19.4	21.5	24.5	26.9
11	35413	6.0	8.1	10.8	12.7	14.4	16.1	17.7	19.4	21.5	24.5	26.9
12	29962	6.0	8.2	10.8	12.8	14.5	16.1	17.8	19.6	21.7	24.6	27.1
13	26840	6.1	8.3	11.1	13.1	14.8	16.5	18.2	20.0	22.2	25.2	27.7
14	25302	6.7	9.1	12.1	14.3	16.2	18.0	19.9	21.9	24.2	27.5	30.3
15	21644	7.7	10.3	13.7	16.1	18.3	20.3	22.4	24.6	27.2	30.9	34.0
16	16285	8.4	11.1	14.6	17.1	19.3	21.4	23.6	25.9	28.6	32.4	35.6
17	9696	9.1	11.9	15.5	18.1	20.4	22.6	24.8	27.2	30.0	33.9	37.2
Girls												
9	33008	7.9	10.2	13.1	15.2	16.9	18.6	20.3	22.1	24.2	27.2	29.6
10	34803	8.5	10.8	13.7	15.7	17.5	19.2	20.9	22.7	24.8	27.7	30.1
11	35250	9.4	11.7	14.5	16.6	18.4	20.1	21.7	23.5	25.6	28.6	31.0
12	29835	10.6	12.9	15.8	17.9	19.7	21.4	23.1	24.9	27.1	30.0	32.5
13	26090	11.9	14.4	17.3	19.5	21.3	23.1	24.8	26.7	28.9	31.9	34.4
14	24563	13.1	15.6	18.6	20.8	22.7	24.5	26.3	28.2	30.4	33.5	36.1
15	20540	13.9	16.4	19.5	21.7	23.6	25.4	27.2	29.1	31.3	34.4	37.0
16	16197	14.4	16.9	20.0	22.2	24.1	25.9	27.6	29.5	31.8	34.9	37.5
17	9352	14.7	17.2	20.3	22.5	24.4	26.1	27.9	29.8	32.1	35.2	37.8

Note: a score of 15 cm corresponds to the participant reaching their toes.

represented approximately 65% of Europe's population and 49% of Europe's land area and included 25 high-income and five upper-middle-income countries. Online supplement 3 provides a summary of the 98 included studies.

Tables 1–9 provide normative values as tabulated centiles from 5% to 95% for all nine Eurofit tests. Smoothed centile curves are presented in figure 4 with additional 20 m shuttle run norms (speed at last completed stage, number of laps and relative  $\dot{V}O_{2peak}$ ) presented in online supplement 4.

On average, 78% of boys (95% CI 72% to 85%) and 83% of girls (95% CI 71% to 96%) had healthy CRF, with the percentage of those with healthy CRF decreasing by about 3% (boys) and 7% (girls) per year from the age of 9 years onwards (figure 5). There was considerable variability in healthy CRF levels among different European countries, which increased with age (see online supplement 5). When dividing Europe into two segments at the 45th parallel north,<sup>41 42</sup> a gradient existed where Northern-Central European countries had a higher percentage

**Table 4** Standing broad jump (cm) centiles by age and sex based on 464900 test performances of children and adolescents aged 9–17 years representing 29 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	35148	100.5	107.9	116.8	123.2	128.7	133.8	138.9	144.3	150.7	159.5	166.8
10	36069	107.6	115.3	124.6	131.3	137.0	142.4	147.7	153.4	160.1	169.3	176.9
11	35618	115.4	123.5	133.3	140.3	146.3	151.9	157.5	163.5	170.5	180.2	188.2
12	30631	122.5	131.0	141.2	148.5	154.8	160.7	166.5	172.8	180.1	190.3	198.6
13	24760	129.7	138.5	149.3	157.0	163.6	169.7	175.9	182.5	190.2	200.9	209.7
14	24061	138.7	148.1	159.6	167.8	174.8	181.4	188.0	195.0	203.2	214.6	223.9
15	20334	147.8	157.8	169.8	178.5	186.0	192.9	199.8	207.2	215.9	227.9	237.8
16	18967	154.2	164.5	176.9	185.9	193.6	200.8	207.9	215.6	224.6	237.0	247.2
17	12108	158.3	168.9	181.6	190.7	198.5	205.8	213.1	221.0	230.1	242.7	253.2
Girls												
9	34339	91.2	98.4	107.1	113.4	118.9	123.9	129.0	134.5	140.8	149.7	157.1
10	35339	98.5	105.9	114.9	121.4	127.0	132.3	137.5	143.2	149.8	159.0	166.6
11	34992	105.6	113.3	122.6	129.4	135.2	140.6	146.0	151.9	158.7	168.2	176.1
12	29974	111.1	119.0	128.6	135.6	141.6	147.1	152.7	158.7	165.8	175.6	183.7
13	23749	113.9	121.9	131.6	138.7	144.8	150.4	156.1	162.2	169.3	179.3	187.5
14	22416	115.6	123.7	133.6	140.7	146.8	152.5	158.3	164.4	171.6	181.7	190.0
15	16394	116.8	124.9	134.8	142.0	148.1	153.9	159.6	165.8	173.1	183.1	191.5
16	18459	117.5	125.6	135.5	142.7	148.8	154.6	160.4	166.6	173.8	183.9	192.2
17	11542	119.0	127.2	137.2	144.4	150.6	156.4	162.3	168.5	175.8	186.0	194.4

**Table 5** Handgrip strength (kg) centiles by age and sex based on 203 295 test performances of children and adolescents aged 9–17 years representing 24 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	10180	8.6	10.1	11.9	13.2	14.3	15.3	16.4	17.5	18.8	20.6	22.1
10	11965	9.5	11.1	13.0	14.5	15.7	16.8	18.0	19.2	20.6	22.6	24.2
11	11358	10.8	12.6	14.8	16.4	17.7	19.0	20.3	21.6	23.2	25.4	27.2
12	13107	13.1	15.2	17.7	19.6	21.2	22.6	24.1	25.7	27.6	30.1	32.3
13	13070	16.9	19.4	22.5	24.7	26.6	28.4	30.2	32.1	34.3	37.4	39.9
14	13843	21.6	24.5	27.9	30.4	32.6	34.6	36.6	38.7	41.2	44.7	47.6
15	10944	25.9	28.9	32.5	35.2	37.4	39.5	41.6	43.9	46.5	50.1	53.2
16	10062	29.1	32.1	35.8	38.5	40.7	42.9	45.0	47.2	49.9	53.6	56.7
17	8157	31.3	34.3	38.0	40.6	42.9	45.0	47.1	49.4	52.1	55.7	58.8
Girls												
9	9690	7.2	8.7	10.4	11.6	12.6	13.6	14.6	15.6	16.8	18.5	19.9
10	11804	8.0	9.6	11.5	12.9	14.1	15.2	16.3	17.5	18.8	20.7	22.3
11	11582	9.4	11.2	13.4	14.9	16.3	17.5	18.8	20.1	21.7	23.9	25.6
12	13331	12.0	13.9	16.2	17.9	19.3	20.6	21.9	23.3	25.0	27.3	29.1
13	13182	16.1	18.0	20.3	21.9	23.3	24.6	25.9	27.3	29.0	31.2	33.1
14	13168	18.5	20.4	22.7	24.3	25.7	27.1	28.4	29.8	31.4	33.7	35.6
15	10586	19.1	21.1	23.5	25.2	26.7	28.0	29.4	30.8	32.5	34.9	36.8
16	9672	19.3	21.2	23.6	25.4	26.9	28.2	29.6	31.1	32.8	35.2	37.2
17	7594	19.4	21.4	23.8	25.5	27.0	28.4	29.8	31.3	33.0	35.5	37.4

of children and adolescents with healthy CRF than Southern European countries (average difference in means (range): 7% (0% to 27%) at the sex-age level).

On average, boys performed substantially better than girls at each age group on muscular strength (ES: large), muscular power (ES: large), muscular endurance (ES: moderate to large), speed-agility (ES: moderate) and CRF (ES: large) tests, with the magnitude of the sex-specific differences increasing with age and accelerating from about 12 years (figure 6). Boys also developed at a faster rate than girls on these tests, especially

during the teenage years. Conversely, girls performed substantially better at each age group on the flexibility test (ES: moderate), with boys and girls developing with age at similar rates. There were negligible sex-specific differences overall on the balance and upper body speed tests, although boys developed at a faster rate than girls on the upper body speed test.

## DISCUSSION

This study systematically analysed 2 779 165 Eurofit performances of children and adolescents aged 9–17 years to generate

**Table 6** Sit-ups (n/30 s) centiles by age and sex based on 481 032 performances of children and adolescents aged 9–17 years representing 23 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	31 757	9	11	13	15	16	17	18	20	21	23	25
10	33 748	11	13	15	17	18	19	20	22	23	25	27
11	35 559	13	14	16	18	19	20	22	23	24	26	28
12	29 338	14	15	17	19	20	21	22	24	25	27	29
13	30 805	14	16	18	20	21	22	23	24	26	28	29
14	29 024	15	17	19	20	22	23	24	25	27	29	30
15	22 541	17	18	20	22	23	24	25	26	28	30	31
16	18 751	18	19	21	22	24	25	26	27	29	30	32
17	12 059	18	20	22	23	24	25	27	28	29	31	33
Girls												
9	31 091	9	11	13	14	15	17	18	19	21	23	25
10	33 131	10	12	14	16	17	18	19	20	22	24	26
11	34 525	11	13	15	16	17	19	20	21	22	24	26
12	31 415	12	13	15	17	18	19	20	21	23	24	26
13	29 168	12	14	15	17	18	19	20	21	23	24	26
14	27 377	12	14	16	17	18	19	20	21	23	25	26
15	21 072	13	14	16	17	19	20	21	22	23	25	26
16	18 365	13	15	16	18	19	20	21	22	23	25	27
17	11 306	13	15	17	18	19	20	21	22	24	25	27



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Original article

**Table 7** Bent-arm hang (s) centiles by age and sex based on 189673 test performances of children and adolescents aged 9–17 years representing 23 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	8282	1.48	2.13	3.29	4.49	5.85	7.48	9.55	12.38	16.74	25.36	35.62
10	9584	1.56	2.25	3.48	4.76	6.20	7.92	10.10	13.08	17.65	26.62	37.23
11	11079	1.63	2.35	3.66	5.00	6.51	8.32	10.60	13.71	18.46	27.73	38.62
12	11899	1.71	2.48	3.87	5.29	6.89	8.79	11.19	14.44	19.39	28.99	40.19
13	12321	1.90	2.77	4.33	5.92	7.70	9.81	12.44	15.99	21.34	31.57	43.30
14	12550	2.50	3.67	5.72	7.78	10.05	12.70	15.96	20.26	26.61	38.39	51.45
15	10576	3.73	5.40	8.26	11.05	14.04	17.43	21.50	26.72	34.18	47.44	61.48
16	9165	5.19	7.39	10.98	14.36	17.87	21.75	26.28	31.94	39.77	53.13	66.71
17	7425	6.48	9.03	13.07	16.74	20.45	24.46	29.04	34.64	42.19	54.66	66.92
Girls												
9	7681	0.98	1.43	2.24	3.08	4.02	5.14	6.55	8.46	11.36	16.94	23.40
10	9287	0.97	1.42	2.24	3.08	4.03	5.15	6.57	8.50	11.42	17.06	23.60
11	10942	0.96	1.42	2.23	3.08	4.03	5.16	6.59	8.53	11.48	17.18	23.79
12	13198	0.96	1.41	2.23	3.08	4.03	5.17	6.60	8.54	11.50	17.22	23.86
13	13613	0.96	1.41	2.23	3.08	4.03	5.18	6.62	8.58	11.56	17.33	24.04
14	13322	0.94	1.40	2.22	3.09	4.06	5.23	6.72	8.73	11.82	17.83	24.86
15	11324	0.92	1.38	2.23	3.11	4.13	5.35	6.91	9.05	12.34	18.80	26.41
16	9639	0.91	1.38	2.27	3.21	4.30	5.63	7.33	9.68	13.33	20.57	29.19
17	7786	0.93	1.43	2.40	3.45	4.67	6.16	8.11	10.82	15.07	23.61	33.92

the largest and most geographically representative sex-specific and age-specific European normative values for physical fitness. These norms add to existing norms across a range of other cardiometabolic risk factors, including adiposity (eg, body mass index<sup>43 44</sup> and waist circumference,<sup>45–49</sup> blood pressure,<sup>50 51</sup> cholesterol,<sup>51</sup> triglycerides<sup>51</sup> and glucose).<sup>51</sup> More importantly, they expand the normative data bank for health-related fitness, building on existing norms studies such as the recently published international CRF norms<sup>31</sup> and other European health-related fitness norms.<sup>52 53</sup>

Despite these norms not being linked to a health outcome, they nonetheless have utility for health and fitness screening, profiling, monitoring and surveillance by identifying the centile rank of children and adolescents in comparison with their peers. For instance, several authors<sup>31 52 54</sup> have suggested using a normative quintile-based framework to classify the fitness levels of children and adolescents, where those below the 20th centile are classified as ‘very low/poor’; 20–40th centiles as ‘low/poor’; 40–60th centiles as ‘moderate’; 60–80th centiles as ‘high/good’ and those above the 80th centile as ‘very high/

**Table 8** 10×5 m agility shuttle run (s) centiles by age and sex based on 258618 test performances of children and adolescents aged 9–17 years representing 19 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	15409	29.26	27.58	25.79	24.64	23.73	22.94	22.20	21.46	20.66	19.64	18.87
10	16773	28.00	26.54	24.98	23.96	23.15	22.44	21.78	21.11	20.38	19.44	18.73
11	17925	26.77	25.53	24.16	23.27	22.55	21.92	21.33	20.73	20.07	19.22	18.57
12	16152	25.68	24.59	23.39	22.60	21.96	21.40	20.86	20.32	19.72	18.94	18.35
13	18549	24.77	23.79	22.70	21.98	21.40	20.88	20.39	19.88	19.33	18.61	18.05
14	16914	24.10	23.18	22.15	21.47	20.92	20.43	19.96	19.48	18.95	18.27	17.73
15	12649	23.61	22.72	21.73	21.06	20.53	20.05	19.60	19.13	18.62	17.95	17.43
16	11783	23.22	22.35	21.37	20.72	20.20	19.73	19.28	18.83	18.32	17.67	17.16
17	6423	22.89	22.03	21.07	20.43	19.91	19.45	19.01	18.56	18.06	17.42	16.91
Girls												
9	16273	30.96	28.96	26.93	25.67	24.70	23.88	23.12	22.37	21.57	20.57	19.83
10	15703	28.87	27.35	25.76	24.74	23.95	23.27	22.63	21.99	21.30	20.43	19.78
11	15063	27.11	25.92	24.64	23.81	23.15	22.58	22.04	21.50	20.90	20.14	19.57
12	18344	26.36	25.29	24.13	23.37	22.77	22.24	21.74	21.24	20.68	19.97	19.43
13	16678	26.06	25.03	23.90	23.16	22.58	22.06	21.58	21.08	20.54	19.85	19.32
14	15589	25.98	24.95	23.83	23.09	22.51	22.00	21.51	21.03	20.49	19.79	19.27
15	11479	25.97	24.94	23.82	23.09	22.51	22.00	21.51	21.02	20.48	19.79	19.26
16	11018	25.95	24.92	23.81	23.07	22.49	21.98	21.50	21.01	20.47	19.78	19.25
17	5895	25.93	24.90	23.79	23.06	22.48	21.96	21.48	20.99	20.46	19.77	19.24

**Table 9** 20 m shuttle run (min/stages) centiles by age and sex based on 445 092 test performances of children and adolescents aged 9–17 years representing 24 countries

Age (years)	n	P <sub>5</sub>	P <sub>10</sub>	P <sub>20</sub>	P <sub>30</sub>	P <sub>40</sub>	P <sub>50</sub>	P <sub>60</sub>	P <sub>70</sub>	P <sub>80</sub>	P <sub>90</sub>	P <sub>95</sub>
Boys												
9	36079	1.27	1.96	2.80	3.41	3.93	4.43	4.92	5.45	6.08	6.95	7.68
10	36935	1.53	2.25	3.13	3.77	4.31	4.83	5.34	5.90	6.55	7.46	8.22
11	30786	1.79	2.53	3.45	4.11	4.68	5.22	5.75	6.33	7.01	7.96	8.75
12	26552	2.04	2.82	3.77	4.46	5.06	5.61	6.18	6.78	7.49	8.47	9.30
13	29467	2.31	3.12	4.11	4.82	5.44	6.02	6.60	7.23	7.97	8.99	9.85
14	28262	2.71	3.55	4.57	5.31	5.95	6.55	7.15	7.80	8.56	9.62	10.51
15	23754	3.08	3.92	4.95	5.70	6.34	6.95	7.56	8.21	8.98	10.05	10.94
16	13417	3.35	4.19	5.22	5.96	6.61	7.21	7.81	8.47	9.23	10.30	11.19
17	11326	3.80	4.64	5.67	6.42	7.06	7.66	8.26	8.91	9.67	10.74	11.63
Girls												
9	35027	0.87	1.41	2.08	2.56	2.98	3.38	3.77	4.20	4.70	5.40	5.98
10	36270	1.03	1.60	2.29	2.79	3.22	3.63	4.04	4.48	5.00	5.72	6.33
11	30751	1.31	1.91	2.64	3.18	3.64	4.07	4.51	4.98	5.53	6.30	6.94
12	26119	1.27	1.89	2.66	3.21	3.69	4.14	4.60	5.08	5.66	6.46	7.13
13	20066	1.25	1.87	2.64	3.20	3.68	4.13	4.58	5.07	5.65	6.46	7.13
14	19557	1.24	1.87	2.64	3.20	3.68	4.13	4.58	5.07	5.65	6.46	7.13
15	15682	1.24	1.87	2.63	3.19	3.67	4.13	4.58	5.07	5.65	6.46	7.13
16	13317	1.21	1.84	2.61	3.17	3.66	4.11	4.57	5.06	5.64	6.45	7.13
17	11725	1.20	1.83	2.60	3.17	3.65	4.11	4.56	5.06	5.64	6.45	7.13

Note: 20 m shuttle run centiles are available for other metrics in online supplement 4.

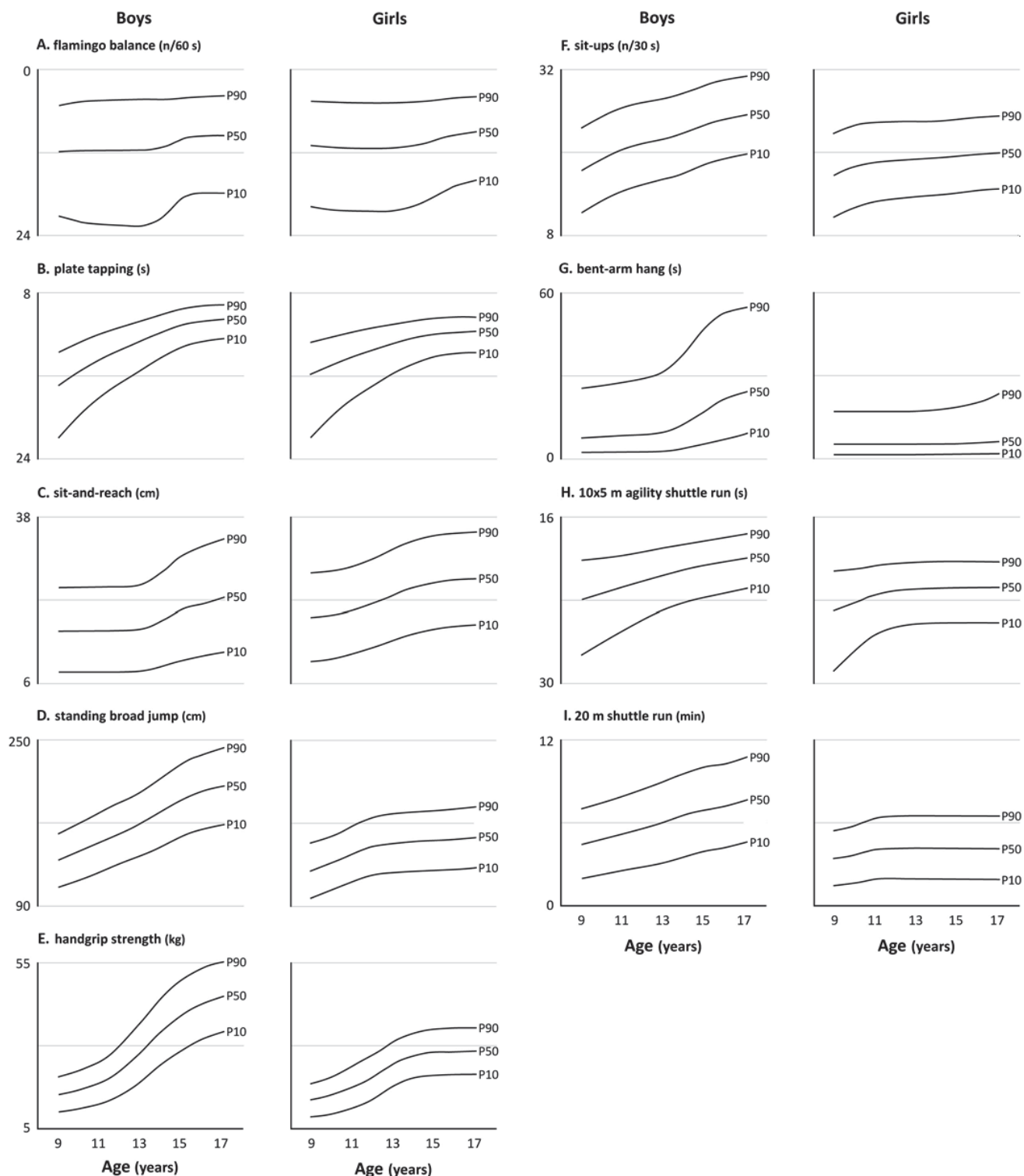
good'. Single test measures can be qualitatively interpreted using these quintile-based thresholds and longitudinal changes tracked against centile bands to identify expected, better than expected or worse than expected developmental changes. In addition, long-term intervention studies are required to determine whether changes in fitness in response to exercise training are over and above expected developmental changes illustrated by our age-related reference values. While individual fitness test scores can be benchmarked and tracked, a composite or overall fitness score could also be generated as an aggregate score summarising centiles across all fitness components or across multiple components or subdomains of interest (eg, a composite score for health-related fitness should aggregate centiles for CRF, MSF and flexibility). This scoring structure, similar to that used in the Canadian Assessment of Physical Literacy,<sup>55 56</sup> could help identify the fitness components/subdomains in need of attention in order to provide appropriate feedback and advice to children about how to best improve their overall physical fitness. In this context, the lowest quintile has extensively been used as a threshold for defining low fitness or unfit youth.<sup>57</sup> In prospective cohort studies, this group has been shown to have a disproportionately higher risk for future diseases.<sup>58</sup> Even more stringent cut-points (eg, 10th centile) have been proposed for individuals who should be checked for the existence of other risk factors or developmental problems. In a cohort study conducted in more than 1 million Swedish male adolescents, it was observed that those in the lowest decile of muscular strength had significantly higher risk of all-cause mortality, cardiovascular disease mortality and suicide mortality, supporting the notion that this should be considered a group at risk.<sup>12</sup>

To date, research examining criterion-referenced standards in children and adolescents has focused on CRF,<sup>22 23 59</sup> with new international standards recently published for healthy CRF recently published.<sup>23</sup> While not the first study to estimate the percentage of European children and adolescents with apparently healthy CRF,<sup>52</sup> this study provides the most current and

best available estimate using the new international criterion-referenced standards. This study is consistent with previous studies showing a latitudinal gradient, where children and adolescents from Northern-Central Europe typically have better CRF than their peers from Southern Europe.<sup>16 41 42</sup> This study also identified considerable variability in healthy CRF levels among different European countries. Variability in CRF was previously identified as a strong unfavourable correlate of country-specific income inequality (operationalised as the Gini index); meaning, countries with a large population spread of income tend to have poor CRF levels.<sup>42</sup> The observed age gradient in healthy CRF levels may reflect that children are generally healthier than adolescents or it may be an artefact of the new international standards being age-independent. Unfortunately, criterion-referenced standards for fitness components other than CRF do not currently exist. In addition, CRF criterion-referenced standards do not exist for outcomes other than cardiometabolic health (ie, poor bone health, mental health, cognitive health and so on), which is a limitation and represents an area for future research.

This study systematically identified and quantified the sex-specific differences in Eurofit performance, showing that boys outperformed girls on CRF, MSF and speed-agility tests and experienced larger age-specific changes, while girls outperformed boys on the flexibility test. While the underlying causes of the sex-specific differences are clear for some fitness components (eg, differences in MSF are largely explained by physical differences such as differences in body size/composition), they are less clear for others (eg, differences in CRF may be explained by physiological differences such as differences in mechanical efficiency and/or the fractional utilisation of oxygen).<sup>21 60 61</sup> It is, nonetheless, beyond the scope of this paper to discuss these mechanistic causes. However, there is a need for longitudinal cohort studies to better understand what mechanisms drive sex-specific and age-specific differences in physical fitness throughout childhood and adolescence.





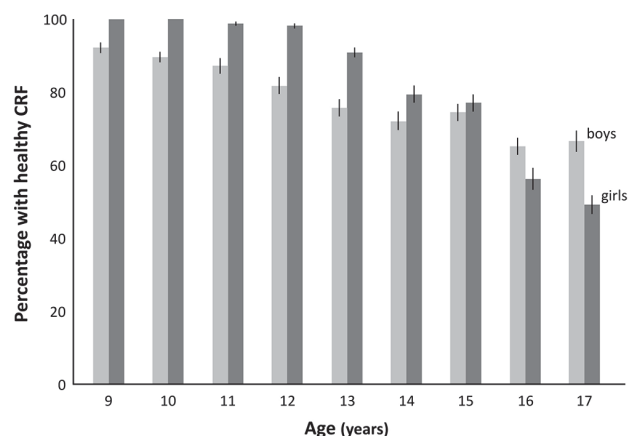
**Figure 4** Smoothed centile curves (P<sub>10</sub>, P<sub>50</sub> and P<sub>90</sub>) for (A) flamingo balance (n/60 s), (B) plate tapping (s), (C) sit-and-reach (cm), (D) standing broad jump (cm), (E) handgrip strength (kg), (F) sit-ups (n/30 s), (G) bent-arm hang (s), (H) 10x5 m agility shuttle run (s) and (I) 20 m shuttle run (min).

### Strengths and limitations

This study summarised cross-sectional Eurofit data from 98 studies to generate probably Europe's largest physical fitness database for children and adolescents. Although not the first comprehensive review of children's Eurofit performance, it does provide an update to a previous review<sup>16</sup> by: (1) extending the

data coverage from 2001 to 2015 through a rigorous systematic review process, (2) producing sex-specific and age-specific European normative values and (3) estimating the percentage of European children and adolescents with healthy CRF.

Despite the strengths of this study, it is not without limitations. First, we pooled data from studies that used different



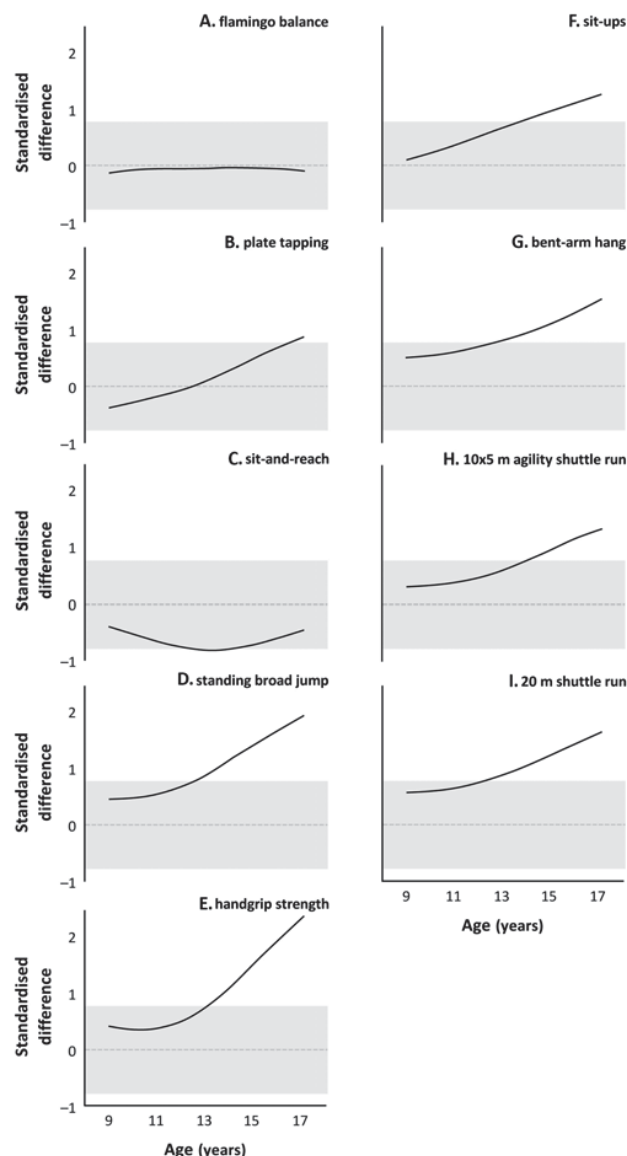
**Figure 5** Percentage of European children and adolescents aged 9–17 years meeting the new international criterion-referenced standards of 42 mL/kg/min (boys, light grey bars) and 35 mL/kg/min (girls, dark grey bars) for healthy CRF. The thin black vertical lines show the 95% CIs. CRF, cardiorespiratory fitness.

sampling methods (probability and non-probability sampling) and sampling frames (national-level, state/provincial-level and community-level), which raises the issue of representativeness. However, we used the best available data and a poststratification population weighted approach to control for oversampling and undersampling across studies and countries. Second, differences in testing conditions (eg, climate, altitude, practice and testing surfaces) and measurement errors (eg, methodological drift and diurnal variation) might have occurred, although the large number of included data points should have minimised these issues. Third, the vigorous nature of the Eurofit may have resulted in difficulties in testing, or exclusion of, individuals with a lower level of physical function. The absence of data from these populations may have inflated our norms within the lower centile range. Fourth, our sex-specific and age-specific norms and differences in Eurofit performance are also limited by the potential for unmeasured confounding. For example, biological maturation, which was rarely reported in the included studies and was therefore not included in our analysis, confounds sex-specific and age-specific differences in physical fitness.<sup>62</sup> Large-scale longitudinal studies focused on the influence of maturation on physical fitness are needed. Finally, Eurofit data were also collected at different times in the period between 1981 and 2015 and given evidence of temporal changes in some (but not all) fitness components in European children,<sup>21 28 63–69</sup> it is possible that our norms represent a different health-related picture than what would actually be observed today. However, without the availability of temporal trends data for all included countries, temporal corrections of our norms are not possible.

### Recommendations

Given the widespread use of the Eurofit and other test batteries such as the ALPHA, there is a need for consistent reporting of results across studies to assist future data pooling and the update of normative values. In addition to recommending that the Eurofit be routinely administered (in part or in whole) in schools to improve national and regional surveillance of health and fitness, we also make the following recommendations:

1. An online multilingual operations and procedures manual, including instructional videos, should be made available (eg, the ALPHA project manual, <http://profith.ugr.es/>



**Figure 6** Standardised sex-specific differences in mean Eurofit performance for European children and adolescents aged 9–17 years. The limits of the grey zone represent the threshold for a large standardised difference (ie, 0.8 or –0.8). Positive differences indicated that Eurofit performances for boys were better than those for girls.

alpha-children). Researchers should make de-identified raw data available through an online data repository<sup>42 70</sup> in order to help improve surveillance efforts across the region. For example, scheduled for official release in 2018 is a free website (<http://www.activehealthykids.org/kids-fit-guide/>) that will compute a report comparing individual 20 m shuttle run performances to national, regional and international normative values and criterion-referenced standards, providing researchers with valuable analytical support.

2. Care should be taken to minimise and report factors that may impact fitness test performance (eg, climate, temperature, humidity, altitude, clothing, ground surfaces/conditions, pre-test instructions and test familiarisation). Studies should be conducted to assess the effect of these factors on fitness test performance.

## What are the new findings?

- This study presents the largest and most geographically representative sex-specific and age-specific European normative values for physical fitness in children and adolescents.
- This study estimated that 78% (95% CI 72% to 85%) of boys and 83% (95% CI 71% to 96%) of girls met the new international criterion-referenced standards of 42 and 35 mL/kg/min respectively for healthy cardiorespiratory fitness (CRF), with the percentage meeting the standards decreasing with age.
- This study showed that boys performed better than girls on muscular strength, muscular power, muscular endurance, speed-agility and CRF tests, but worse on the flexibility test. Boys' fitness also generally improved at a faster rate than girls' fitness, especially during the teenage years.

## How might it impact on clinical practice in the future?

- Sex-specific and age-specific European normative values for physical fitness in children and adolescents are important for health and fitness screening, profiling, monitoring and surveillance.

- Best practice should include that: (1) test protocols be followed and test results be reported as per the operations and procedures manual; (2) biological age (sexual maturation) be measured (if appropriate) in addition to chronological age; (3) descriptive statistics (sample sizes, means and SDs) be reported in 1 year age and sex groups based on age at last birthday and (4) the year(s) of testing be reported.

## CONCLUSION

Physical fitness is an important indicator of good health, and the Eurofit is probably the most popular way to measure physical fitness throughout Europe. This study pooled 2 779 165 Eurofit performances, representing children and adolescents from 30 European countries. This large summary analysed the best available Eurofit data to: (1) provide the largest and most geographically representative sex-specific and age-specific European normative values for physical fitness in children and adolescents and (2) estimate the percentage of children and adolescents with healthy CRF according to the new international criterion-referenced standards. These data have utility for both health and sport promotion given that they help to identify children and adolescents with: (1) very low/poor fitness in order to set appropriate fitness goals, monitor longitudinal changes and promote positive health-related fitness behaviours (eg, physical activity and exercise promotion) and (2) very high/good fitness in the hope of recruiting them into sporting or athletic development programmes.

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(3) H. Jackson  
(3) W. Pepper

IN THE CIRCUIT COURT OF HARRISON COUNTY, WEST VIRGINIA

RE: CHANGE OF NAME OF

[REDACTED] P [REDACTED] -J [REDACTED]

Civil Action No. 22-P-104-1  
Judge Christopher J. McCarthy

Heather D. Jackson and  
Wesley Scott Pepper, as parents

Petitioners.

**ORDER GRANTING PETITION FOR CHANGE OF NAME**

Pending before the Court is a Petition for Change of Name, filed by Heather Jackson and Wesley Pepper, as parents, legal guardians, and next of friends on behalf of their daughter, originally named [REDACTED] P [REDACTED] -J [REDACTED], a minor child. The Petitioner seeks the name change in order for her name to conform with her gender identity.

On May 2, 2022, the Petitioners filed the Petition for name change that is pending. The hearing was scheduled for June 1, 2022. On June 1, 2022, this Court held a hearing on the Petition following proper publication of notice as a Class-I legal advertisement. Present at said hearing were Petitioners Heather D. Jackson, Wesley Scott Pepper, and the Minor Child.

The Court now concludes that the Petition will be **GRANTED**.

**FINDINGS OF FACT**

1. On May 2, 2022, Heather D. Jackson and Wesley Scott Pepper filed in Harrison County, West Virginia a Petition for Change of Name seeking to change their daughter's name from [REDACTED] P [REDACTED] -J [REDACTED] to [REDACTED] P [REDACTED] -J [REDACTED].

2. [REDACTED] F [REDACTED]-J [REDACTED] has been a bona fide resident of Harrison County for all relevant periods of time.
3. Notice of the hearing on said Petition was published as a Class-I legal advertisement on May 18, 2022, in the Clarksburg Exponent Telegram, a newspaper of general circulation for Harrison County, West Virginia, at least 10 days prior to the June 1, 2022 hearing.
4. The name change is not being sought for any of the illegal purposes articulated in West Virginia Code § 48-25-101(a), and the Petitioners are not barred from seeking a name change based on the provisions of § 48-25-101(a) or § 48-25-103, as represented by the Petitioners in their properly verified Petition.<sup>1</sup>
5. No injury will be done to any person by reason of the name change.
6. Reasonable and proper cause exists for the name change.

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<sup>1</sup> West Virginia Code § 48-25-101(a) states:

(a) A person desiring a change of his or her own name, or that of his or her child, may apply to the circuit court or family court of the county in which he or she resides by a verified petition setting forth and affirming the following:

(1) That he or she has been a bona fide resident of the county for at least one year prior to the filing of the petition or that he or she is a nonresident of the county who was born in the county, was married in the county and was previously a resident of the county for a period of at least fifteen years;

(2) The cause for which the change of name is sought;

(3) The new name desired;

(4) The name change is not for purposes of avoiding debt or creditors;

(5) The petitioner seeking the name change is not a registered sex offender pursuant to any state or federal law;

(6) The name change sought is not for purposes of avoiding any state or federal law regarding identity;

(7) The name change sought is not for any improper or illegal purpose;

(8) The petitioner is not a convicted felon in any jurisdiction;

(9) The name change sought is not for any purpose of evading detection, identification or arrest by any local, state or federal law-enforcement agency; and

(10) Whether or not the petitioner desires to protect his or her identity for personal safety reasons.

7. The name change is not sought for any fraudulent or evil intent on the part of the Petitioners.
8. Petitioners testified at the hearing that their daughter wished to change her name to reflect her gender identity. The minor child also testified to this fact.

### **CONCLUSIONS OF LAW**

Pursuant to West Virginia Code § 48-25-103(a), a court may grant a name change after making certain findings regarding the facts and circumstances of a Petition:

Upon the filing of the verified petition, and upon proof of the publication of the notice and of the matters set forth in the petition, and being satisfied that no injury will be done to any person by reason of the change, and upon a finding that all representations the applicant has affirmed pursuant to subsection (a), section one hundred one of this article are true and the applicant is not prohibited from obtaining a name change pursuant to this article, that reasonable and proper cause exists for changing the name of petitioner and that the change is not desired because of any fraudulent or evil intent on the part of the petitioner, the court or judge may order a change of name.

W. Va. Code § 48-25-103(a).

The Court is not permitted to grant a name change if certain other circumstances are present:

(b) The court may not grant any change of name for any person convicted of any felony during the time that the person is incarcerated.

(c) The court may not grant any change of name for any person required to register with the State Police pursuant to the provisions of article twelve, chapter fifteen of this code during the period that the person is required to register.

(d) The court may not grant a change of name for persons convicted of first degree murder in violation of section one, article two, chapter sixty-



one of this code for a period of ten years after the person is discharged from imprisonment or is discharged from parole, whichever occurs later.

(e) The court may not grant a change of name of any person convicted of violating any provision of section fourteen-a, article two, chapter sixty-one of this code for a period of ten years after the person is discharged from imprisonment or is discharged from parole, whichever occurs later.

W. Va. Code § 48-25-103(b)–(e).

Further, when a name change involves a minor child, proof that the change is in the best interest of the child is necessary over and above what is required by the name change statute. W. Va. Code § 48-25-101 et seq.; Syl. Pt. 3, *In re Name Change of Jenna A.J.*, 231 W. Va. 159, 744 S.E. 2d 269 (2013) (internal citations omitted). Any name change involving a minor child may be made only upon clear, cogent, and convincing evidence that the change would significantly advance the best interests of the child. *Id.* at 231 W. Va. at 163, 744 S.E.2d at 273 (2013).

The Court finds that it is the best interest of the minor child to change her name for several reasons. First, children who are allowed to have names conforming to their gender identity feel more accepted by the community as a whole. Second, changing the minor child's name to her gender identity ensures a safe and happy mental state by the child in conforming with her gender identity. Finally, this name change is supported by the parents. Both of whom know the mind of their child.

The Court is satisfied that all the requirements of the above-quoted statutes have been met, and that the Petitioner is not barred from having the Petition granted by the same.

**ORDER**

Therefore, based on its above-stated findings, the Court concludes that the instant Petition will be **GRANTED**.

It is hereby **ORDERED** that the name of [REDACTED] P [REDACTED]-J [REDACTED] shall be changed to B [REDACTED] F [REDACTED]-J [REDACTED] by which name she shall hereafter be called.

It is **FURTHER ORDERED** that Petitioner shall immediately deliver a certified copy of this Order to the Office of the Clerk of the County Commission of Harrison County, West Virginia, the current county of his residence, and upon payment of any fees the clerk shall immediately record the same in a book to be kept for the purpose of name changes, and index the same under both the old and the new names. After this Order is filed in the Office of the Clerk of the County Commission, the new name of B [REDACTED] P [REDACTED]-J [REDACTED] is to be used in place of the Petitioner's former name.

It is **FURTHER ORDERED** that the Clerk of this Court shall send three (3) certified copies of this Order to the Petitioners, Heather D. Jackson and Wesley Scott Pepper, 12537 Buckhannon Pike, Lost Creek, WV 26385. This is a **FINAL ORDER**. The Clerk of this Court is **ORDERED** to remove this case from the Court's docket.

ENTER: 6/2/2022

  
The Hon. Christopher J. McCarthy, Chief Judge

STATE OF WEST VIRGINIA  
COUNTY OF HARRISON, TO-WIT

I, Albert F. Marano, Clerk of the Fifteenth Judicial Circuit and the 18<sup>th</sup> Family Court Circuit of Harrison County, West Virginia, hereby certify the foregoing to be a true copy of the ORDER entered in the above styled action on the 2<sup>nd</sup> day of June, 2022.

IN TESTIMONY WHEREOF, I hereunto set my hand and affix the

Seal of the Court this 2<sup>nd</sup> day of June, 2022.

Albert F. Marano

Fifteenth Judicial Circuit & 18<sup>th</sup>

Family Court Circuit Clerk

Harrison County, West Virginia

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J. by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF EDUCATION, HARRISON COUNTY BOARD OF EDUCATION, WEST VIRGINIA SECONDARY SCHOOL ACTIVITIES COMMISSION, W. CLAYTON BURCH in his official capacity as State Superintendent, DORA STUTLER in her official capacity as Harrison County Superintendent, and THE STATE OF WEST VIRGINIA,

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

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**PLAINTIFF’S REPLY IN SUPPORT OF HER MOTION *IN LIMINE* TO EXCLUDE EVIDENCE AND/OR TESTIMONY OF BERNARD DOLAN REGARDING CERTAIN HEARSAY STATEMENTS AND SUPPORTING MEMORANDUM OF LAW**

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B.P.J. has moved this Court to exclude two statements made by Mr. Dolan at his deposition: (1) a statement by Mr. Dolan that an unknown and unidentified male student allegedly told him that he would “be a girl” to play on the volleyball team and (2) a statement by an unidentified school staff member who allegedly told Mr. Dolan that the school “had one student who one day identified as a girl, next day a boy, and back and forth.” (Dkt. No. 406 (Pl. MIL) at 2.) In their oppositions, the State (Dkt. No. 422 (State Opp.)) and Intervenor (Dkt. No. 427 (Intervenor Opp.)) have walked themselves into a corner. To avoid the bar against hearsay, the State now concedes

that the only probative value of the statements would be to justify the enactment of H.B. 3293. But these statements are irrelevant for that purpose and thus inadmissible.

### ARGUMENT

As a preliminary matter, even if Mr. Dolan testifies at trial, both of the statements at issue are inadmissible hearsay.<sup>1</sup> Defendants now argue that the statements will not be introduced for the truth of the matter, but instead to show the state of mind of those enacting H.B. 3293. But Mr. Dolan is not a legislator and did not have any input on whether or if H.B. 3293 was enacted. As a result, it is wholly irrelevant whether Mr. Dolan was on notice of these alleged statements or what his state of mind was having heard these alleged statements. The same goes for the declarants—they had no part in the enactment of H.B. 3293 and thus their state of mind or intentions are entirely irrelevant. Instead, the only way that these statements touch on any issue before this Court is if the State and Intervenor introduce them for the truth of the matter asserted therein: a misplaced effort to bolster the legislature’s decision to enact H.B. 3293. Therefore, the statements are inadmissible hearsay that do not fall into any exception. Fed. R. Evid. 802.

Moreover, the statements are irrelevant. According to the State and Intervenor, these hearsay statements are probative because they show that “at the time H.B. 3293 was enacted, the WVSSAC was experiencing activity on this topic [of transgender students participating in secondary school athletics].” (Dkt. No. 422 (State Opp.) at 3; *see* Dkt. No. 427 (Intervenor Opp.) at 1 (stating that these statements are admissible because they are “germane to refute B.P.J.’s argument that legislators had no legitimate reason to enact [H.B. 3293]”).) The State also claims

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<sup>1</sup> The State claims that Mr. Dolan will be a witness at trial and thus that his deposition testimony will only be used if he is “unavailable” or for impeachment. (Dkt. 422 (State Opp.) at 4.) If a hearing is required and Mr. Dolan appears, the first hearsay bar will be addressed. But if he does not appear, Plaintiff reserves the right to challenge the basis of his “unavailability” and maintains that both statements are inadmissible hearsay. Fed. R. Evid. 801(c).

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother,  
HEATHER JACKSON,

*Plaintiff,*

vs.

WEST VIRGINIA STATE BOARD OF  
EDUCATION; HARRISON COUNTY BOARD  
OF EDUCATION; WEST VIRGINIA  
SECONDARY SCHOOLS ACTIVITIES  
COMMISSION; W. CLAYTON BURCH, in his  
official capacity as State Superintendent, DORA  
STUTLER, in her official capacity as the  
Harrison County Superintendent, and the  
STATE OF WEST VIRGINIA,

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

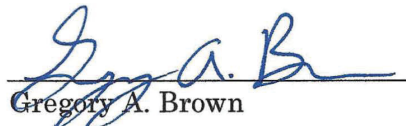
Case No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**DECLARATION OF GREGORY A. BROWN, PH.D., FACSM**

I, Dr. Gregory A. Brown, pursuant to 28 U.S. Code § 1746, declare under penalty of perjury under the laws of the United States of America that the facts contained in my Supplemental Expert Report of Gregory A. Brown, Ph.D. FACSM in the Case of B.P.J. v. West Virginia State Board of Education, attached hereto, are true and correct to the best of my knowledge and belief, and that the opinions expressed therein represent my own expert opinions.

Executed on October 21, 2022.

  
Gregory A. Brown

**Supplemental Expert Report of Gregory A. Brown, Ph.D. FACSM in the  
case of B.P.J. vs. West Virginia State Board of Education**

October 21, 2022

**Introduction**

Since the submission of my expert report of February 23, 2022, in *B.P.J. v. West Virginia State Board of Education*, I have become aware of a number of developments in physiology scholarship and sports policy concerning the participation of biological males who identify as female in women's sports. The purpose of this supplement is to update my report with these developments and explain how they bear on the opinions expressed in my report.

**Effects of Puberty Suppression on the Components of Athletic Performance**

1. In Boogers et al. (2022), the researchers studied the effects of puberty suppression followed by cross-sex hormone therapy on the adult height of natal males who identify as female. Analyzing retrospective data collected from 1972 to 2018, they concluded that “although P[uberty] S[uppression] and [cross-sex hormones] alter the growth pattern, they have little effect on adult height.” (9) In other words, natal males who followed a normal course of puberty suppression followed by cross-sex hormone therapy reached an adult height at or near their predicted height in the absence of such therapy.<sup>1</sup>

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<sup>1</sup> Eleven participants were given a high dose of the cross-sex hormone ethynyl estradiol (EE) instead of a normal course of estradiol in an attempt to reduce growth, and the researchers found a small reductive effect. They noted, however, that the study did not evaluate the side effects of high-dose EE, that their clinic was studying alternatives to high-dose EE “[b]ecause of the increased risk of venous thromboembolism,” and that high-dose EE “is no longer used to limit growth” in cisgender girls because of the potential side effects. (9) Based on population-level data, it does not appear that the reductive effect of high-dose EE on height eliminated the male-female height differential, but the authors of the paper did not address that question.



2. In my report, I cited Roberts and Carswell (2021) noting the dearth of published research on the effects of puberty suppression followed by cross-sex hormones in adult height. (1680–81) The Boogers study helps to fill that gap in the published literature with peer-reviewed evidence that puberty suppression followed by cross-sex hormone therapy does not meaningfully affect adult height.

3. This is relevant to the question of whether puberty suppression eliminates sex-based performance advantages. It provides evidence that an important component of that advantage—male vs. female height—is not eliminated, or even meaningfully affected, by an ordinary course of puberty suppression followed by cross-sex hormone therapy. *See* Brown Rep. ¶¶ 43–44 (discussing male height advantage).

4. In my report, I stated: “There is not any scientific evidence that [puberty blockers] eliminate[] the pre-existing performance advantages that prepubertal males have over prepubertal females.” Brown Rep. ¶ 113. That remains true. And the Boogers study strengthens that conclusion with evidence that the male height advantage is not eliminated by puberty suppression followed by cross-sex hormone treatment.

#### **Additional Research on the Effects of Testosterone Suppression**

5. I cited a variety of peer-reviewed research supporting the proposition that testosterone suppression does not erase male performance advantage in most athletic endeavors in my report. *See generally* Brown Rep. ¶¶ 119–57.

6. Heather (2022) is a new peer-reviewed literature review examining the evidence to date on whether testosterone suppression eliminates the physiological building blocks of male athletic advantage. In this review, Dr. Heather studied the existing literature on male advantages in brain structure, muscle mass, bone structure, and the cardio-respiratory system, and the effects of testosterone suppression on those advantages. She concluded:

Given that the percentage difference between medal placings at the elite level is normally less than 1%, there must be confidence that an elite transwoman athlete retains no residual advantage from former testosterone exposure, where the inherent advantage depending on sport could be 10–30%. Current scientific evidence can not [sic] provide such assurances and thus, under abiding rulings, the inclusion of transwomen in the elite female division needs to be reconsidered for fairness to female-born athletes. (8)

7. This study is relevant because it demonstrates that a well-respected physiologist has reviewed the literature and come to the same basic conclusion as set forth in my expert report: based on the best current scientific evidence, testosterone suppression does not erase male performance advantage.

8. Alvares (2022) is a new cross-sectional study on cardiopulmonary capacity and muscle strength in biological males who identify as female and have undergone long-term cross-sex hormone therapy.

9. All of the study subjects that were biological males who identify as female had testosterone suppressed through medication (cyproterone acetate) or gonadectomy. (Supplementary materials) And they had taken exogenous estrogen for an average of 14.4 years with a standard deviation of 3.5 years.

10. Compared to a control group of cisgender women, the study subjects exhibited advantages in body height, body mass, lean body mass, and muscle strength, confirming the findings of previous studies but extending the information to a longer time period. A novel aspect of this study is the demonstration that, even after 14 years of testosterone suppression and estrogen administration, the biological males who identify as female exhibited advantages in cardio-respiratory capacity measured as higher  $VO_2$  peak and higher  $O_2$  pulse, which suggests that male advantages are retained in events that are influenced by cardio-respiratory endurance (e.g. distance running, cycling, swimming, etc.).

11. This study provides further reliable evidence that even long-term testosterone suppression does not eliminate all of the sex-based athletic advantages between males and females and that there is retained advantage in cardiopulmonary capacity and muscle strength.

### **New Athletic Organization Policies**

12. Since my report of February 23, 2022, there have been additional developments in the ways athletic associations have addressed the participation of male athletes who identity as female in the female category. As noted in my report, policymaking in this area is in flux, and numerous athletic associations are in the process of revising their policies. The following non-exhaustive description of new policies since the issuance of my report include the following.

13. ***Aquatics.*** FINA, the international aquatics (swimming and diving) federation, issued a new policy in June 2022 allowing biological males to compete in the female category of aquatics only if they can establish that they “had male puberty suppressed beginning at Tanner Stage 2 or before age 12, whichever is later, and they have since continuously maintained their testosterone levels in serum (or plasma) below 2.5 nmol/L.” FINA Policy on Eligibility for the Men’s and Women’s Categories § F.4.b.ii. A biologically male athlete who cannot meet these criteria is prohibited from competing in the female category. *Id.*

14. This policy is based on the review of the scientific literature conducted by an independent panel of experts in physiology, endocrinology, and human performance, including specialists in transgender medicine. This panel concluded:

[I]f gender-affirming male-to-female transition consistent with the medical standard of care is initiated after the onset of puberty, it will blunt some, but not all, of the effects of testosterone on body structure, muscle function, and other determinants of performance, but there will be persistent legacy effects that will give male-to-female transgender athletes (transgender women) a relative performance advantage over biological females. A biological female athlete cannot overcome that

advantage through training or nutrition. Nor can they take additional testosterone to obtain the same advantage, because testosterone is a prohibited substance under the World Anti-Doping Code. (2)

15. **Rugby.** In July 2022, England's Rugby Football Union and Rugby Football League both approved new policies limiting the female category to players whose sex recorded at birth is female for contact rugby for the under 12 age group and above. Rugby Football League Gender Participation Policy § 4.2(d); Rugby Football Union Gender Participation Policy § 4.2(d).

16. In August 2022, the Irish Rugby Football Union adopted the same policy. Irish Rugby Football Union Gender Participation Policy §§ 4.5(b) & (f).

17. In September 2022, the Welsh Rugby Union also adopted the same policy.<sup>2</sup>

18. These bodies based their policy on a review of the scientific research, which showed that male advantage “cannot be sufficiently addressed even with testosterone suppression.” Rugby Football Union Gender Participation Policy § 3.4; *see also* Rugby Football League Gender Participation Policy § 3.4; Irish Rugby Football Union Gender Participation Policy § 4.3.

19. **Triathlon.** In June 2022, British Triathlon adopted a new policy limiting competition in the female category to “people who are the female sex at birth.” British Triathlon Transgender Policy § 7.2.

20. This policy is based on its review of the scientific literature and conclusions that “the scientific community broadly agrees that the *majority* of the physiological/biological advantages brought about by male puberty are retained (either wholly or partially) by transwomen post transition” and that testosterone suppression does not “sufficiently remove[] the retained sporting performance

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<sup>2</sup> <https://www.wru.wales/2022/09/wru-updates-gender-participation-policy/>.

advantage of transwomen.” British Triathlon Transgender Policy § 2 (emphasis in original).

21. In August 2022, World Triathlon issued a new policy limiting the female category to biological females and to biological males who have suppressed circulating testosterone to 2.5 nmol/L for at least 24 months and have not competed in the male category in at least 48 months. World Triathlon Transgender Policy Process § 3. Previously, it had followed the old IOC guidelines of requiring testosterone suppression to 10 nmol/L for at least 12 months.

22. In issuing this policy, World Triathlon stated that “the potential advantage in muscle strength/power of Transgender women cannot be erased before two years of testosterone suppression.” World Triathlon Transgender Policy Process § 3. Notably, World Triathlon did not assert that two years of testosterone suppression actually erases male performance advantage, nor did it cite any evidence that would support such a proposition.<sup>3</sup>

23. Although World Triathlon listed sports scientists Drs. Emma Hilton and Ross Tucker as consultants in developing the new policy, both immediately criticized the policy as allowing male advantage into female triathlon competitions.<sup>4</sup>

24. Another sports scientist listed as a consultant to World Triathlon, Dr. Alun Williams, has opined that basing eligibility on circulating testosterone levels is

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<sup>3</sup> The sentence quoted above cites to Roberts (2020), which, as noted in my report, did not find that male performance advantage was erased after two years. To the contrary, after two years, the male-to-female transitioners maintained an advantage over biological females in the 1.5 mile run. *See* Brown Rep. ¶ 134. Further, the sit-up and push-up results strongly suggested a retained advantage in overall strength. *See* Brown Rep. ¶ 131.

<sup>4</sup> *See* <https://twitter.com/scienceofsport/status/1555072611285143552>; <https://twitter.com/FondOfBeetles/status/1555518655806537729>.

not evidence-based policymaking because of the lack of evidence that testosterone suppression eliminates male performance advantage.<sup>5</sup>

25. **Cycling.** In June 2022, UCI, the world cycling federation, changed its eligibility criteria for males who identify as female competing in the female category from 12 months of testosterone suppression to the level of 5 nmol/L to 24 months of testosterone suppression to the level of 2.5 nmol/L. UCI Rules § 13.5.015.

26. In releasing the new policy, UCI cited a position paper by Prof. Xavier Bigard (2022), which concluded that the “potential [male] advantage on muscle strength / power cannot be erased before a period of 24 months.” (15) Notably, Prof. Brigard did not assert that the best available evidence shows that male advantage is actually erased after 24 months; he merely asserted that the evidence shows that male advantage is *not* erased *before* 24 months.<sup>6</sup>

27. **Boxing.** In August 2022, the World Boxing Council issued a new policy requiring athletes to compete in accordance with their natal sex. World Boxing Council Statement/Guidelines Regarding Transgender Athletes Participation in Professional Combat Sports. The WBC concluded that any other policy would raise “serious health and safety concerns.” *Id.* ¶ 5.

28. **Conclusion.** These new policies represent a growing recognition among athletic organizations that the best available science shows that male performance advantage is retained despite testosterone suppression. To be sure, different athletic organizations prioritize the competing values of fairness, safety, and inclusion in different ways. But increasingly, athletic organizations are making policy against the backdrop of a scientific consensus that male advantage in most

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<sup>5</sup> See <https://www.pressreader.com/uk/the-mail-on-sunday/20220327/284399857680074>.

<sup>6</sup> The sentence quoted above also cites to Roberts (2020), which, as noted, did not find that male strength or performance advantages were erased after two years. See *supra* note 3.

athletic endeavors is substantial, and that there is no regimen of testosterone suppression proven to eliminate that advantage. That consensus is even clearer now than it was when I issued my report in February 2022, and the spate of new athletic policies reflects increasing awareness and acceptance of the available science.



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**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA**

**CHARLESTON DIVISION**

B. P. J., et al.,

Plaintiffs,

v.

CIVIL ACTION NO. 2:21-cv-00316

WEST VIRGINIA STATE BOARD OF EDUCATION, et al.,

Defendants.

**MEMORANDUM OPINION AND ORDER**

West Virginia passed a law that defines “girl” and “woman,” for the purpose of secondary school sports, as biologically female. Under the law, all biological males, including those who identify as transgender girls, are ineligible for participation on girls’ sports teams. B.P.J., a transgender girl who wants to play girls’ sports, challenges the law. The question before the court is whether the legislature’s chosen definition of “girl” and “woman” in this context is constitutionally permissible. I find that it is.

**I. Relevant Facts**

**A. B.P.J.**

B.P.J. is an eleven-year-old transgender girl. This means that although B.P.J.’s biological sex is male, she now identifies and lives as a girl. According to her First Amended Complaint, B.P.J. began expressing her female gender identity when she

was three years old. [ECF No. 285-2]. By the end of third grade, B.P.J. expressed herself fully—both at home and otherwise—as a girl. In 2019, B.P.J. was diagnosed with gender dysphoria and, at the first signs of puberty, she began taking puberty blocking medications to treat that condition. [ECF No. 289-21]. As a result, B.P.J. has not undergone endogenous male puberty.

In 2021, as she prepared to enter middle school, B.P.J. expressed interest in trying out for the girls' cross-country and track teams. When her mother, Plaintiff Heather Jackson, asked the school to allow B.P.J. to participate on the girls' teams, the school initially informed her that whether B.P.J. would be permitted to play on the girls' teams depended on the outcome of House Bill ("H.B.") 3293, which was then pending in the West Virginia legislature. When the law passed, the school informed Ms. Jackson that B.P.J. would not be permitted to try out for the girls' teams.

### **B. The "Save Women's Sports Bill"**

H.B. 3293, entitled the "Save Women's Sports Bill," was introduced in the West Virginia House of Delegates on March 18, 2021. The bill passed and was codified as West Virginia Code Section 18-2-25d, entitled "Clarifying participation for sports events to be based on biological sex of the athlete at birth." The law, which was clearly carefully crafted with litigation such as this in mind, begins with the following legislative findings:

- (1) There are inherent differences between biological males and females, and that these differences are cause for celebration, as determined by the Supreme Court of the United States in *United States v. Virginia* (1996);

- (2) These inherent differences are not a valid justification for sex-based classifications that make overbroad generalizations or perpetuate the legal, social, and economic inferiority of either sex. Rather, these inherent differences are a valid justification for sex-based classifications when they realistically reflect the fact that the sexes are not similarly situated in certain circumstances, as recognized by the Supreme Court of the United States in *Michael M. v. Sonoma County Superior Court* (1981) and the Supreme Court of Appeals of West Virginia in *Israel v. Secondary Schools Act. Com'n* (1989);
- (3) In the context of sports involving competitive skill or contact, biological males and biological females are not in fact similarly situated. Biological males would displace females to a substantial extent if permitted to compete on teams designated for biological females, as recognized in *Clark v. Ariz. Interscholastic Ass'n* (9th Cir. 1982);
- (4) Although necessarily related, as concluded by the United States Supreme Court in *Bostock v. Clayton County* (2020), gender identity is separate and distinct from biological sex to the extent that an individual's biological sex is not determinative or indicative of the individual's gender identity. Classifications based on gender identity serve no legitimate relationship to the State of West Virginia's interest in promoting equal athletic opportunities for the female sex; and
- (5) Classifications of teams according to biological sex is necessary to promote equal athletic opportunities for the female sex.

W. Va. Code § 18-2-25d(a)(1)–(5).

After making these findings, the law sets forth definitions of “biological sex,” “female,” and male” as follows:

- (1) “Biological sex” means an individual's physical form as a male or female based solely on the individual's reproductive biology and genetics at birth.

(2) “Female” means an individual whose biological sex determined at birth is female. As used in this section, “women” or “girls” refers to biological females.

(3) “Male” means an individual whose biological sex determined at birth is male. As used in this section, “men” or “boys” refers to biological males.

*Id.* § 18-2-25d(b)(1)–(3).

Finally, the law requires that each athletic team that is “sponsored by any public secondary school or a state institution of higher education” “be expressly designated as” either male, female, or coed, “based on biological sex.” *Id.* § 18-2-25d(c). Teams that are designated “female” “shall not be open to students of the male sex where selection for such teams is based upon competitive skill or the activity involved is a contact sport.” *Id.* § 18-2-25d(c)(2).

### **C. Procedural History**

On May 26, 2021, B.P.J., through her mother, filed this lawsuit against the West Virginia State Board of Education and its then-Superintendent W. Clayton Burch, the Harrison County Board of Education and its Superintendent Dora Stutler, and the West Virginia Secondary Schools Activities Commission (“WVSSAC”). The State of West Virginia moved to intervene, and that motion was granted. Plaintiff then amended her complaint, [ECF No. 64], naming the State of West Virginia and Attorney General Patrick Morrissey as defendants. Mr. Morrissey has since been dismissed as a party from this lawsuit.

In her amended complaint, B.P.J. alleges that Defendants Burch, Stutler, and the WVSSAC deprived her of the equal protection guaranteed to her by the

Fourteenth Amendment and that the State, the State Board of Education, the Harrison County Board of Education, and the WVSSAC have violated Title IX. B.P.J. seeks a declaratory judgment that Section 18-2-25d of the West Virginia Code violates Title IX and the Equal Protection Clause; an injunction preventing Defendants from enforcing the law against her; a waiver of the requirement of a surety bond for preliminary injunctive relief; nominal damages; and reasonable attorneys' fees.

B.P.J. initially requested a preliminary injunction to allow her to compete on the girls' track and cross-country teams during the pendency of this case. Finding that B.P.J. had a likelihood of success on the merits of her as-applied challenge to the law, I granted the preliminary injunction. All defendants moved to dismiss, and those motions were denied. Lainey Armistead, a cisgender<sup>1</sup> female college athlete then moved to intervene as a defendant and that motion was granted. All parties have now moved for summary judgment.

## II. Legal Standard

Summary judgment is appropriate where the “depositions, documents, electronically stored information, affidavits or declarations, stipulations . . . , admissions, interrogatory answers, or other materials” show that “there is no genuine dispute as to any material fact and the movant is entitled to judgment as a matter of law.” Fed R. Civ. P. 56(a), (c)(1)(A).

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<sup>1</sup> “Cisgender” means a person whose gender identity aligns with her biological sex. *See Grimm v. Gloucester Cnty. Sch. Bd.*, 972 F.3d 586, 594 (4th Cir. 2020), *as amended* (Aug. 28, 2020), *cert. denied*, 141 S. Ct. 2878 (2021).

### III. Analysis

B.P.J. alleges that H.B. 3293 violates the Constitution's Equal Protection Clause and Title IX. I will address each argument in turn. Before turning to the merits of those arguments, however, I find it important to address some preliminary matters.

#### A. The WVSSAC's Motion

The WVSSAC does not argue the merits of Plaintiff's Equal Protection or Title IX claims. Rather, the WVSSAC only argues that it is not a state actor and is therefore not subject to scrutiny under either the Equal Protection Clause or Title IX. I disagree. Defendant WVSSAC's motion [ECF No. 276] is **DENIED**.

A court may only apply equal protection scrutiny to state action. U.S. Const. amend. XIV, § 1, cl. 4.; *Lugar v. Edmondson Oil Co., Inc.*, 457 U.S. 922, 923–24 (1982). Likewise, only a party acting under the color of state law is subject to suit pursuant to 42 U.S.C. § 1983. Despite differing terms, the color-of-law requirement in a § 1983 claim and the state action requirement under the Fourteenth Amendment are synonymous and are analyzed the same way. *See Lugar*, 457 U.S. at 923–24; *United States v. Price*, 383 U.S. 787, 794 (1966).

“[T]he character of a legal entity is determined neither by its expressly private characterization in statutory law, nor by the failure of the law to acknowledge the entity's inseparability from recognized government officials or agencies.” *Brentwood Acad. v. Tenn. Secondary Sch. Athletic Ass'n*, 531 U.S. 288, 931 (2001) (citing *Lebron v. Nat'l R.R. Passenger Corp.*, 513 U.S. 374 (1995)). For example, an ostensibly



private actor can become a state actor when it is “controlled by an ‘agency of the State,’” or “entwined with governmental policies[,]” or the government is “entwined in [its] management or control.” *Pennsylvania v. Bd. of Dir. of City Trs. of Phila.*, 353 U.S. 230, 231 (1957); *Evans v. Newton*, 382 U.S. 296, 299 (1966). There is, however, no rigid test to determine when a challenged action becomes a state action. *Brentwood Acad.*, 531 U.S. at 295. No single fact nor set of conditions will definitively confer state action because there may be a better “countervailing reason against attributing activity to the government.” *Id.* at 295–96. “Only by sifting facts and weighing circumstances can the nonobvious involvement of the State in private conduct be attributed its true significance.” *Lugar*, 457 U.S. at 939 (citing *Burton v. Wilmington Parking Auth.*, 365 U.S. 715, 860 (1961); *Peltier v. Charter Day Sch., Inc.*, 37 F.4th 104, 116 (4th Cir. 2022) (“[T]he inquiry is highly fact-specific in nature.”).

After considering its composition, rulemaking process, obligations under state law, and other rules for student eligibility, I find the WVSSAC is a state actor. Like in *Brentwood Acad.*, the WVSSAC’s nominally private character “is overborne by the pervasive entwinement of public institutions and public officials in its composition and workings, and there is no substantial reason to claim unfairness in applying constitutional standards to it.” 531 U.S. at 298. I find that the WVSSAC is a state actor for several reasons. Though county boards of education have the statutory authority to supervise and control interscholastic athletic events, they have delegated that authority to the WVSSAC. [ECF No. 285-1]. Every public secondary school in

West Virginia is a member of the WVSSAC, and the school principals sit on the WVSSAC's Board of Control to propose and vote on sports rules and regulations. *Id.* Any rule the WVSSAC passes is then subject to approval by the State Board of Education, and the State Board of Education requires that any coach who is not also a teacher be trained by the WVSSAC and certified by the State Board of Education. *Id.* And the WVSSAC Board of Directors—the entity that enforces the rules—includes representatives of the State Superintendent and the State Board of Education, among other governmental entities. *Id.*; 127 C.S.R. § 127-1-8.2. Here, it appears that the WVSSAC cannot exist without the state, and the state cannot manage statewide secondary school activities without the WVSSAC. The WVSSAC is pervasively entwined with the state.

The WVSSAC's motion for summary judgment [ECF No. 276] is therefore **DENIED**.

#### **B. Animus**

In her Amended Complaint, B.P.J. alleges that H.B. 3293 was introduced in the legislature “as part of a concerted, nationwide effort to target transgender youth for unequal treatment.” [ECF No. 64, ¶ 45]. B.P.J. alleges that the law was “targeted at, and intended only to affect, girls who are transgender.” *Id.* ¶ 46. In support of these contentions, B.P.J. points to the actions of bill co-sponsor Delegate Jordan Bridges. According to the Amended Complaint, Delegate Bridges made a Facebook post announcing the introduction of the bill and then “‘liked’ comments on his post that advocated for physical violence against girls who are transgender, compared

girls who are transgender to pigs, and called girls who are transgender by a pejorative term.” *Id.* ¶ 47. In her summary judgment motion, B.P.J. again points the court to the actions of Delegate Bridges and points to several instances where legislators made clear that the purpose of the bill was to address transgender participation in sports.

Notwithstanding these statements, B.P.J. does not argue that the law is unconstitutional under the Supreme Court’s animus doctrine, and the record lacks sufficient legislative history to make such a finding. The record makes abundantly clear, however, that West Virginia had no “problem” with transgender students playing school sports and creating unfair competition or unsafe conditions. In fact, at the time it passed the law, West Virginia had no known instance of any transgender person playing school sports. While the legislature did take note of transgender students playing sports in other states, it is obvious to me that the statute is at best a solution to a potential, but not yet realized, “problem.”

Even so, the law is only unconstitutional under the animus doctrine if the reason for its passage was the “bare desire” to harm transgender people. *U.S. Dep’t of Agric. v. Moreno*, 413 U.S. 528, 535 (1973). While the record before me does reveal that at least one legislator held or implicitly supported private bias against, or moral disapproval of, transgender individuals, it does not contain evidence of that type of animus more broadly throughout the state legislature. Therefore, I cannot find unconstitutional animus on the record before me.

### C. Other Matters

Next, before proceeding to the merits of the case, I find it important to briefly discuss what this case is *not*.

First, despite the politically charged nature of transgender acceptance in our culture today, this case is *not* one where the court needs to accept or approve B.P.J.'s existence as a transgender girl. B.P.J., like all transgender people, deserves respect and the ability to live free from judgment and hatred for simply being who she is. But for the state legislature, creating a "solution" in search of a problem, the courts would have no reason to consider eligibility rules for youth athletics. Nevertheless, I must do so now.

This is also *not* a case where B.P.J. challenges the entire structure of school sports. B.P.J. does not challenge, on a broad basis, sex-separation in sports. B.P.J. wants to play on a girls' team. And she admits that there are benefits associated with school athletics, "including when such athletics are provided in a sex-separated manner." [ECF No. 286-1, at 1445]. Ultimately, B.P.J.'s issue here is not with the state's offering of girls' sports and boys' sports. It is with the state's definitions of "girl" and "boy." The state has determined that for purposes of school sports, the definition of "girl" should be "biologically female," based on physical differences between the sexes. And the state argues that its definition is appropriate here because it is substantially related to an important government interest. B.P.J., for her part, seeks a legal declaration that a transgender girl is "female."

I will not get into the business of defining what it means to be a “girl” or “woman.” The courts have no business creating such definitions, and I would be hard-pressed to find many other contexts where one’s sex and gender are relevant legislative considerations. But I am forced to consider whether the state’s chosen definition passes constitutional muster in this one discrete context.

#### **D. Equal Protection**

Having addressed those matters, I now turn to the merits of B.P.J.’s claim that H.B. 3293 violates the Constitution’s Equal Protection Clause.

##### **1. Legal Standard**

The Equal Protection Clause of the Fourteenth Amendment provides that no state may deny any person within its jurisdiction “equal protection of the laws.” U.S. Const. amend. XIV, § 1, cl. 4. In other words, “all persons similarly situated should be treated alike.” *City of Cleburne, Tex. v. Cleburne Living Ctr.*, 473 U.S. 432, 439 (1985). Realistically, though, every law impacts people differently, and the Fourteenth Amendment does not prohibit that outcome. *Reed v. Reed*, 404 U.S. 71, 75 (1971). But the Equal Protection Clause does forbid a statute from placing people into different classes and treating them unequally for reasons “wholly unrelated to the objective of that statute.” *Id.* at 75–76. Ultimately, if a law seeks to treat different groups of people differently, it must do so “upon some ground of difference having a fair and substantial relation to the object of the legislation, so that all persons similarly circumstanced shall be treated alike.” *Id.* at 76 (quoting *Royster Guano Co. v. Virginia*, 253 U.S. 412, 415 (1920)).

In general, courts presume that a law is constitutional. Based on that presumption, courts may only overturn a law if the challenger can show that the law's classification is not rationally related to *any* government interest. *Moreno*, 413 U.S. at 533. This general review is known as rational basis review. However, the court's inquiry becomes more searching if the law disadvantages a group of people who have historically been discriminated against and whose identity has nothing to do with their ability to participate in society. Race-based laws, for example, are "immediately suspect" because "they threaten to stigmatize individuals by reason of their membership in a racial group." *Shaw v. Reno*, 509 U.S. 630, 643 (1993). Laws based on race, or other suspect classifications such as alienage and national origin, are subject to strict scrutiny and will only be upheld "upon an extraordinary justification." *Id.* at 643–44 (quoting *Pers. Adm'r of Mass. v. Feeney*, 442 U.S. 256, 272 (1979)). Under strict scrutiny, the law must be "narrowly tailored to serve a compelling governmental interest." *Cleburne*, 473 U.S. at 440.

In the middle of rational basis review and strict scrutiny lies intermediate scrutiny. Intermediate scrutiny applies to laws that discriminate on the basis of a quasi-suspect classification, like sex, *United States v. Virginia*, 518 U.S. 515, 533 (1996), and transgender status, *Grimm v. Gloucester Cnty. Sch. Bd.*, 972 F.3d 586, 611 (4th Cir. 2020), *as amended* (Aug. 28, 2020), *cert. denied*, 141 S. Ct. 2878 (2021) ("Engaging with the suspect class test, it is apparent that transgender persons constitute a quasi-suspect class."). Sex discrimination receives intermediate scrutiny because while states have historically used sex as a basis for invidious discrimination,

we recognize that there are some “real differences” between males and females that could legitimately form the basis for different treatment. *Virginia*, 518 U.S. at 533.

The Supreme Court has long “viewed with suspicion laws that rely on ‘overbroad generalizations about the different talents, capacities, or preferences of males and females.’” *Sessions v. Morales-Santana*, 137 S. Ct. 1678, 1692 (2017) (quoting *Virginia*, 518 U.S. at 533). Therefore, laws that discriminate based on sex must be backed by an “exceedingly persuasive justification.” *Virginia*, 518 U.S. at 513. That is to say, the law’s proponents must show that it “serves important governmental objectives and that the discriminatory means employed are substantially related to the achievement of those objectives.” *Miss. Univ. for Women v. Hogan*, 458 U.S. 718, 724 (1982). Even if the law’s objective is to protect the members of one sex, that “objective itself is illegitimate” if it relies on “fixed notions concerning [that sex’s] roles and abilities.” *Morales-Santana*, 137 S. Ct. at 1692.

The party defending the statute must “present[] sufficient probative evidence in support of its stated rationale for enacting a [sex] preference, i.e., . . . the evidence [must be] sufficient to show that the preference rests on evidence-informed analysis rather than on stereotypical generalizations.” *H.B. Rowe Co. v. Tippet*, 615 F.3d 233, 242 (4th Cir. 2010) (quoting *Eng’g Contractors Ass’n of S. Fla. v. Metro. Dade Cnty.*, 122 F.3d 895, 910 (11th Cir. 1997)); *Concrete Works of Colo., Inc. v. City & Cnty. of Denver*, 321 F.3d 950, 959 (10th Cir. 2003) (“[T]he gender-based measures . . . [must be] based on ‘reasoned analysis rather than [on] the mechanical application of



traditional, often inaccurate, assumptions.” (quoting *Miss. Univ. for Women*, 458 U.S. at 726)).

## 2. Discussion

There is no debate that intermediate scrutiny applies to the law at issue here—H.B. 3293 plainly separates student athletes based on sex. And even B.P.J. agrees that the state has an important interest in providing equal athletic opportunities for female students. [ECF No. 291, at 24]. As discussed earlier, B.P.J. does not challenge sex-separation in sports on a broad basis; she does not argue that teams should be separated based on some other factor or not separated at all. Rather, B.P.J. recognizes the benefits of sex-separated athletics and takes issue only with the state’s definitions of “girl” and “woman” as based on biological sex.

B.P.J. argues that “H.B. 3293 excludes students from sports teams based on ‘biological sex’ and defines ‘biological sex’ solely in terms of ‘reproductive biology and genetics at birth.’” *Id.* at 19. According to B.P.J., H.B. 3293 uses this “‘ends-driven definition[] of “biological sex”” to ‘guarantee a particular outcome’: Barring girls who are transgender from qualifying as girls for purposes of school sports and thereby categorically excluding them from girls’ teams and therefore from school sports altogether.” *Id.* (quoting *Grimm*, 972 F.3d at 626 (Wynn, J., concurring)). B.P.J. argues that this definition of “biological sex,” and the related definitions of “girl” and “woman,” are not substantially related to the government interest in providing equal athletic opportunities for females.

The State of West Virginia, the State Board defendants, the Harrison County defendants, and Intervenor Lainey Armistead all argue that the state's classification based on "biological sex" is substantially related to its important interest in providing equal athletic opportunities for females. The state points to a longstanding recognition in the courts that "[p]hysical differences between men and women . . . are enduring' and render 'the two sexes . . . not fungible.'" [ECF No. 305, at 13–14 (quoting *Virginia*, 518 U.S. at 533)]. And the state argues that in order to preserve athletic opportunities for females, it is necessary to exclude biological males from female teams because males as a group have significant athletic advantage over females and thus the two groups are not similarly situated. [ECF No. 287, at 6–8].

The record does make clear that, in passing this law, the legislature intended to prevent transgender girls from playing on girls' sports teams. In making that decision, the legislature considered an instance in Connecticut where two transgender girls ran on the girls' track team and won at least one event. Cisgender girls there sued, claiming the state's policy allowing the transgender girls to play on girls' teams violated Title IX. *Id.* at 5. But acting to prevent transgender girls, along with all other biological males, from playing on girls' teams is not unconstitutional if the classification is substantially related to an important government interest. The state's interest in providing equal athletic opportunity to females is not at issue here, and B.P.J. does not argue that sex-separate sports in general are not substantially related to that interest. Rather, B.P.J. argues that she and other transgender girls

should be able to play on girls' teams despite their male sex, because their gender identity is "girl."

While sex and gender are related, they are not the same. *See e.g., PFLAG, PFLAG National Glossary of Terms* (June 2022), <http://pflag.org/glossary> (defining "biological sex" as the "anatomical, physiological, genetic, or physical attributes that determine if a person is male, female, or intersex . . . includ[ing] both primary and secondary sex characteristics, including genitalia, gonads, hormone levels, hormone receptors, chromosomes, and genes" and explaining that "[b]iological sex is often conflated or interchanged with gender, which is more societal than biological, and involves personal identity factors"). It is beyond dispute that, barring rare genetic mutations not at issue here, a person either has male sex chromosomes or female sex chromosomes. Gender, on the other hand, refers to "a set of socially constructed roles, behaviors, activities, and attributes that a given society considers appropriate." *Id.* Gender identity, then, is "[a] person's deeply held core sense of self in relation to gender." *Id.* For most people, gender identity is in line with biological sex. *See Grimm*, 972 F.3d at 594. That is, most females identify as girls or women, and most males identify as boys or men. But gender is fluid. There are females who may prefer to dress in a style that is more typical of males (or vice versa), and there are males who may not enjoy what are considered typical male activities. These individuals may, however, still identify as the gender that aligns with their sex. Others may not. When one's gender identity is incongruent with their sex, that person is transgender. To be transgender, one must have a deeply held "consistent[], persistent[], and insistent[]"

conviction that their gender is, “on a binary, . . . opposite to their” biological sex. *Id.* I recognize that being transgender is natural and is not a choice. But one’s sex is also natural, and it dictates physical characteristics that are relevant to athletics.

Whether a person has male or female sex chromosomes determines many of the physical characteristics relevant to athletic performance. Those with male chromosomes, regardless of their gender identity, naturally undergo male puberty, resulting in an increase in testosterone in the body. B.P.J. herself recognizes that “[t]here is a medical consensus that the largest known biological cause of average differences in athletic performance between [males and females] is circulating testosterone beginning with puberty.” [ECF No. 291, at 28]. While some females may be able to outperform some males, it is generally accepted that, on average, males outperform females athletically because of inherent physical differences between the sexes. This is not an overbroad generalization, but rather a general principle that realistically reflects the average physical differences between the sexes. Given B.P.J.’s concession that circulating testosterone in males creates a biological difference in athletic performance, I do not see how I could find that the state’s classification based on biological sex is not substantially related to its interest in providing equal athletic opportunities for females.

In parts of her briefing, B.P.J. asks me to find that specifically excluding transgender girls from the definition of “girl” in this context is unconstitutional because transgender girls can take puberty blockers or other hormone therapies to mitigate any athletic advantage over cisgender females. B.P.J., for example, is

biologically male, but she identifies as a girl. To express her gender identity, she goes by a traditionally feminine name, wears her hair long, uses female pronouns, and in all other respects lives as a girl. Before the first signs of puberty, B.P.J. made no other changes as a result of her transgender identity. But, once she started showing signs of male puberty, B.P.J. began taking puberty blocking medications, pausing the male puberty process. In that respect, B.P.J. argues that she has not gained the physical characteristics typical of males during and after puberty.

While this may be true for B.P.J., other transgender girls may not take those medications. They may not even come to realize or accept that they are transgender until after they have completed male puberty. Even if a transgender girl wanted to receive hormone therapy, she may have difficulty accessing those treatment options depending on her age and the state where she lives. And, as evidenced by the thousands of pages filed by the parties in this case, there is much debate over whether and to what extent hormone therapies after puberty can reduce a transgender girl's athletic advantage over cisgender girls. Additionally, of course, there is no requirement that a transgender person take any specific medications or undergo hormone therapy before or after puberty. A transgender person may choose to only transition socially, rather than medically. In other words, the social, medical, and physical transition of each transgender person is unique.

The fact is, however, that a transgender girl is biologically male and, barring medical intervention, would undergo male puberty like other biological males. And biological males generally outperform females athletically. The state is permitted to

legislate sports rules on this basis because sex, and the physical characteristics that flow from it, are substantially related to athletic performance and fairness in sports.

Could the state be more inclusive and adopt a different policy, as B.P.J. suggests, which would allow transgender individuals to play on the team with which they, as an individual, are most similarly situated at a given time? Of course. But it is not for the court to impose such a requirement here. Sex-based classifications fall under intermediate scrutiny and therefore do not have a “narrowly-tailored” requirement. As intervenor, Lainey Armistead, points out, “[s]ome boys run slower than the average girl . . . [and] [s]ome boys have circulating testosterone levels similar to the average girl because of medical conditions or medical interventions,” but B.P.J. denies that the latter “would be similarly situated [to cisgender girls] for purposes of Title IX and the Equal Protection Clause,” and does not argue that they should be allowed to play on girls’ teams. [ECF No. 288, at 17 (citing ECF No. 286-1, at 1473)]. This is inconsistent with her argument that the availability of hormone therapies makes transgender girls similarly situated to cisgender girls. In fact, after reviewing all of the evidence in the record, including B.P.J.’s telling responses to requests for admission, it appears that B.P.J. really argues that transgender girls are similarly situated to cisgender girls for purposes of athletics at the moment they verbalize their transgender status, regardless of their hormone levels.

The legislature’s definition of “girl” as being based on “biological sex” is substantially related to the important government interest of providing equal athletic

opportunities for females. B.P.J.’s motion for summary judgment on this basis is **DENIED**.

### **E. Title IX**

Finally, I address B.P.J.’s claim that H.B. 3293 violates Title IX. B.P.J. brings this claim against the State of West Virginia, the State Board of Education, the County Board of Education, and the WVSSAC.

#### **1. Legal Standard**

Title IX provides that “no person . . . shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.” 20 U.S.C. § 1681(a). To succeed on a Title IX claim, a plaintiff must prove that she was (1) excluded from an educational program on the basis of sex; (2) that the educational institution was receiving federal financial assistance at the time; and (3) that “improper discrimination caused [her] harm.” *Grimm*, 972 F.3d at 616 (citing *Preston v. Va. ex rel. New River Cmty. Coll.*, 31 F.3d 203, 206 (4th Cir. 1994)). “In the Title IX context, discrimination ‘mean[s] treating [an] individual worse than others who are similarly situated.’” *Id.* at 618 (quoting *Bostock v. Clayton Cnty.*, 140 S. Ct. 1731, 1741 (2020)). Title IX permits sex-separate athletic teams “where selection for such teams is based upon competitive skill or the activity involved is a contact sport.” 34 C.F.R. § 106.41(b).



## 2. Discussion

B.P.J. argues that H.B. 3293 violates Title IX because it excludes transgender girls from participation on girls' sports teams. B.P.J. argues that this amounts to complete exclusion from school sports altogether, and that it is discrimination because she and other transgender girls are similarly situated to cisgender girls. [ECF No. 291, at 17]. The state responds that the law does not violate Title IX because it does not exclude B.P.J. from school athletics. "To the contrary, it simply designates on which team [she] shall play." [ECF No. 287, at 22]. And, the County Defendants argue that Title IX authorizes sex separation in sports in the same scenarios outlined in H.B. 3293—"where selection for such teams is based upon competitive skill or the activity involved is a contact sport." W. Va. Code § 18-2-25d(c)(2). All Defendants<sup>2</sup> argue that while it did not define the term, Title IX used "sex" in the biological sense because its purpose was to promote sex equality. Therefore, they argue that H.B. 3293 furthers, not violates, Title IX. I agree.

Title IX authorizes sex separate sports in the same manner as H.B. 3293, so long as overall athletic opportunities for each sex are equal. 34 C.F.R. § 106.41(b)–(c). As other courts that have considered Title IX have recognized, although the regulation "applies equally to boys as well as girls, it would require blinders to ignore that the motivation for the promulgation of the regulation" was to increase opportunities for women and girls in athletics. *Williams v. Sch. Dist. of Bethlehem, Pa.*, 998 F.2d 168, 175 (3d Cir. 1993). There is no serious debate that Title IX's

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<sup>2</sup> Excluding the WVSSAC.

endorsement of sex separation in sports refers to biological sex. Nevertheless, B.P.J. argues that transgender girls are similarly situated to cisgender girls, and therefore their exclusion from girls' teams is unlawful discrimination. But as I have already discussed, transgender girls are biologically male. Short of any medical intervention that will differ for each individual person, biological males are not similarly situated to biological females for purposes of athletics. And, despite her repeated argument to the contrary, transgender girls are not excluded from school sports entirely. They are permitted to try out for boys' teams, regardless of how they express their gender.

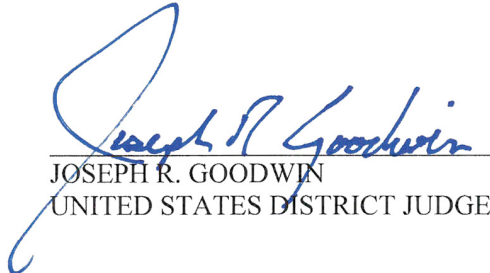
I do not find that H.B. 3293, which largely mirrors Title IX, violates Title IX. B.P.J.'s motion for summary judgment on this basis is **DENIED**.

#### IV. Conclusion

I have no doubt that H.B. 3293 aimed to politicize participation in school athletics for transgender students. Nevertheless, there is not a sufficient record of legislative animus. Considering the law under the intermediate scrutiny standard, I find that it is substantially related to an important government interest. B.P.J.'s motion for summary judgment is **DENIED**. Defendant WVSSAC's motion for summary judgment [ECF No. 276] is **DENIED**. The motions for summary judgment filed by the State of West Virginia [ECF No. 285], the Harrison County defendants [ECF No. 278], the State Board defendants [ECF No. 283], and Intervenor Lainey Armistead [ECF No. 286] are **GRANTED** to the extent they argue that H.B. 3293 is constitutional and complies with Title IX. The preliminary injunction is **DISSOLVED**. All other pending motions are **DENIED as moot**.

The court **DIRECTS** the Clerk to send a copy of this Order to counsel of record and any unrepresented party. The court further **DIRECTS** the Clerk to post a copy of this published opinion on the court's website, [www.wvsd.uscourts.gov](http://www.wvsd.uscourts.gov).

ENTER: January 5, 2023



JOSEPH R. GOODWIN  
UNITED STATES DISTRICT JUDGE

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA

CHARLESTON DIVISION

B. P. J., et al.,

Plaintiffs,

v.

CIVIL ACTION NO. 2:21-cv-00316

WEST VIRGINIA STATE BOARD OF EDUCATION, et al.,

Defendants.

JUDGMENT ORDER

The court **ORDERS** that judgment be entered in accordance with accompanying Memorandum Opinion and Order, and that this case be dismissed and stricken from the docket.

The court **DIRECTS** the Clerk to send a certified copy of this Judgment Order to counsel of record and to any unrepresented party.

ENTER: January 5, 2023

  
JOSEPH R. GOODWIN  
UNITED STATES DISTRICT COURT



JA4279

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J. by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent, DORA  
STUTLER in her official capacity as Harrison  
County Superintendent, and THE STATE OF  
WEST VIRGINIA,

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**DECLARATION OF B.P.J.**

I, B.P.J., pursuant to 28 U.S.C. § 1746, declare as follows:

1. I make this declaration of my own personal knowledge, and, if called as a witness, I could and would testify competently to the matters stated herein.

2. On April 19, 2022, I signed a declaration for my attorneys to submit to the court. When I signed the declaration, I was an 11-year-old girl in sixth grade at Bridgeport Middle School.

3. I am now a 12-year-old girl, and I am currently in the seventh grade at Bridgeport Middle School.

4. I knew from when I was very little that I am a girl. I began receiving puberty-delaying medication in 2020 as part of my treatment for gender dysphoria, which I am still receiving. The doctors gave me a Vantas implant, and I felt so happy that my body would reflect the girl that I am. In June of 2022, after years of visits, my doctor told me that I was ready to begin an estrogen hormone therapy called Estradiol, and I have been taking that medication in addition to the puberty-delaying medication for the last seven months.

5. Competing on a team with my friends on the girls' cross-country and track-and-field teams is a central part of my life and identity. After my Fall cross-country season in 2021, I was very excited to try out for the girls' track-and-field team in the Spring of 2022. My coach, Ms. Schoonmaker, encouraged me to try out some of the field events based on my running times from my cross-country season so that I could still join the track-and-field team and compete with my friends. I ended up loving shotput and discus, and I made the team for those two events. It was so much fun to cheer on my teammates who ran at the meets, and they would cheer me on when I competed in shotput and discus. I then ran on the girls' cross-country team again in Fall 2022. I am excited to try out for the girls' track-and-field team this spring and have been preparing to do so. Tryouts begin on February 27, 2023.

6. The past two years on Bridgeport Middle School's girls' cross-country and track-and-field teams have been the best of my life. I love being on a team with my friends. We have the best time during practices and at cross-country and track-and-field meets. If I had not been able to join the cross-country or track-and-field teams these last few years, I would have missed out on challenging myself with all the amazing friends I made and the time we got to spend together. My teammates support me even when I am not the fastest or best on the team.

7. Every practice and meet is different. I learn something new at each event, and I am happiest when I am trying my best and motivating my teammates to do their best. When it rains and our trails become muddy, we have so much fun together being knee-deep in the mud and finishing our runs. When I compete in meets, I always feel the support from my coach, my teammates, and my family to have fun and keep a positive attitude. You get to push yourself, and the only way to lose is by not trying your hardest. I love breathing in the fresh air and feeling proud when I work hard. I feel so free and fully myself when I am out on the field.

8. When my mom told me that the court had ruled against me and I would no longer be able to participate on the girls' team with my friends, I felt so angry and upset. I ran upstairs to my room and cried in my bed the whole night.

9. I was scared to go to school the next day and tell my friends and my teammates the bad news, but they were so supportive. Even the kids I am not as close to at school told me they think it is unfair that this law prevents me from participating on the girls' team. Running on the boys' team is not an option for me, but would be deeply upsetting, humiliating, and confusing because I am a girl. I feel sad and frustrated that West Virginia does not see me for the girl that I am and won't let me play on a team with my friends and be happy.

10. I don't want to stop doing the thing that I love and that is part of who I am. Sports are everything to me and my cross-country and track-and-field teams have become my second family over the last two years. Nothing makes me happier than being on a team with my friends and competing on behalf of my school. I have many more years of cross-country and track-and-field left, and I just want the opportunity to participate in school sports like any other girl.

\* \* \*



I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on January 20, 2023

B. P. J.  
B.P.J.

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J. by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent, DORA  
STUTLER in her official capacity as Harrison  
County Superintendent, and THE STATE OF  
WEST VIRGINIA,

*Defendants,*

and

LAINIEY ARMISTEAD,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

**DECLARATION OF HEATHER JACKSON**

I, Heather Jackson, pursuant to 28 U.S.C. § 1746, declare as follows:

1. I make this declaration of my own personal knowledge, and, if called as a witness, I could and would testify competently to the matters stated herein.

2. On April 19, 2022, I signed a declaration for my attorneys to submit to the court.

3. I am 54 years old. I am the mother of two sons, ages 21 and 14, and a 12-year-old daughter. I live in Lost Creek, West Virginia.

4. My daughter's name is B.P.J. B.P.J. has been on puberty delaying treatment since 2020, under the care of a multidisciplinary team of medical providers with expertise in treating transgender adolescents.

5. In June of 2022, under the care of Dr. Kacie Kidd and her team at the West Virginia University Department of Pediatrics, B.P.J. and I were told that B.P.J. was eligible to start hormone therapy. B.P.J. had pure joy and radiance in her eyes when she realized her body could develop in a way that matches what her brain is telling her. After we spoke as a family, and after we spoke in-depth with her medical and mental health providers, B.P.J. was prescribed estradiol, an estrogen-based hormone therapy, which she has been taking for the last seven months. B.P.J. is very comfortable with her treatment plan and is so excited for her body to go through puberty in a way that matches who she is.

6. For the past year and a half—thanks to the court’s injunction order—participating on Bridgeport Middle School’s girls’ cross-country and track teams has meant everything to my daughter. Having the opportunity to play on the girls’ teams is important to B.P.J. because she feels her happiest when she is out on the field making friends and competing in one of her favorite sports. She is a gracious teammate and an incredible motivator, and she always tries to have as much fun as possible!

7. After running with her cross-country team in the Fall of 2021, B.P.J. was so excited for Spring track-and-field in 2022. Although B.P.J. was not fast enough to make the track-and-field team in running events, her coach, Ms. Schoonmaker, encouraged her to try out for the field events, and B.P.J. focused on shotput and discus. B.P.J. loved taking on a new challenge, was able to make the team, and participated in meets for those two field events. At the Connect Bridgeport Middle School Invitational, B.P.J. placed 36 out of 45 participants in shotput, and 29 out of 29 participants in discus; at the Ritchie Middle School Pizza Box Invitational, B.P.J. placed 15 out of 25 participants in discus; and at the Harry Green Middle School Invitational, B.P.J. placed 57 out

of 61 participants in shotput, and 35 out of 53 participants in discus. B.P.J.'s 2022 track-and-field meet records are attached hereto as Exhibit A.

8. After participating on the cross-country and track-and-field teams for both seasons in the 2021-2022 school year, it was no surprise to me that B.P.J. carried this interest into her seventh-grade year, and tried out for, and made, the girls' cross-country team again in the Fall of 2022. During this second cross-country season of hers, B.P.J. participated in several meets with her teammates. At the Charles Point Invitation, B.P.J. placed 54 out of 55 participants; at the Mountain Holler Middle School Invitational, B.P.J. placed 43 out of 53 participants; at the Taylor County Middle School Invitational, B.P.J. placed 38 out of 46 participants; at the Elkins Middle School Invitational, B.P.J. placed 78 out of 80 participants; and at the Mid-Mountain 10 Conference Middle School Championships, B.P.J.'s final race of the season, B.P.J. finished 64 out of 65 participants. B.P.J. did not participate in any additional meets after her final race due to a toe injury that she has since recovered from. B.P.J.'s 2022 cross-country meet records are attached hereto as Exhibit B.

9. B.P.J. has been excited about trying out for track again this spring and has been planning to do so. Tryouts will take place on February 27, 2023.

10. My daughter's love for participating in school sports is a precious thing. B.P.J. loves all the friends she has made on the girls' cross-country and track teams, trying her best at every practice and meet, and being a team player. In her two years of sports with Bridgeport Middle School, B.P.J. has not encountered any problems with any of her teammates or children from any other schools, and her coaches and teachers have been extremely supportive of her participation. I have never seen my daughter happier than when I pick her up from practices and take her to meets. Photos from B.P.J.'s 2022 cross-country season are attached as Exhibit C.

11. This new year of 2023 has been incredibly difficult for B.P.J. I watched my daughter run upstairs to her room in tears after I told her about the recent ruling against her and removing the injunction that allowed her to participate as the girl she is. She was devastated and cried for the entire night and told me that she was terrified about not being able to continue doing the thing that she loves with her friends. The next morning, B.P.J. told me that although she is very sad, she will never stop fighting for her right to play with her teammates and to be treated equally.


12. Forcing B.P.J. to compete on the boys' cross-country or track-and-field teams would profoundly harm her, erase who she actually is, and make participating in the school sports that bring her so much joy impossible for her. She cannot be the person she is and compete on the boys' team.

13. My daughter is a twelve-year old girl who just wants the same opportunities as the other girls in her school. By refusing to treat her as a girl and singling her out for different treatment than all the other girls, West Virginia sends a clear message that it refuses to see her, accept her, and respect her equally to others. My daughter will be forever harmed if she is not able to compete alongside her teammates and friends as she has done so happily for the past year and a half.

\* \* \*

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on January 20, 2023

A handwritten signature in black ink, appearing to read "Heather Jackson", is written over a light gray rectangular background.

---

Heather Jackson

IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION

B.P.J., by her next friend and mother, HEATHER JACKSON,

*Plaintiff,*

v.

WEST VIRGINIA STATE BOARD OF  
EDUCATION, HARRISON COUNTY BOARD  
OF EDUCATION, WEST VIRGINIA  
SECONDARY SCHOOL ACTIVITIES  
COMMISSION, W. CLAYTON BURCH in his  
official capacity as State Superintendent, DORA  
STUTLER in her official capacity as Harrison  
County Superintendent, and THE STATE OF  
WEST VIRGINIA,

*Defendants,*

and

LAINY ARMISTEAD,

*Defendant-Intervenor.*

Civil Action No. 2:21-cv-00316

Hon. Joseph R. Goodwin

NOTICE OF APPEAL

Notice is hereby given that B.P.J., by her next friend and mother, Heather Jackson, appeals to the United States Court of Appeals for the Fourth Circuit from the judgment order entered in this action on January 5, 2023.

Dated: January 23, 2023

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Respectfully Submitted,  
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**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION**

**B.P.J., by her next friend and mother,  
HEATHER JACKSON,**

**Plaintiff,**

**v.**

**Civil Action No. 2:21-cv-00316  
Honorable Joseph R. Goodwin, Judge**

**WEST VIRGINIA STATE BOARD OF EDUCATION,  
HARRISON COUNTY BOARD OF EDUCATION,  
WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISSION, W. CLAYTON BURCH  
in his official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent,**

**Defendants,**

**And**

**LAINY ARMISTEAD,**

**Defendant-Intervenor.**

**NOTICE OF APPEAL**

Defendant West Virginia Secondary School Activities Commission appeals to the United States Court of Appeals for the Fourth Circuit from the ‘state actor’ and other related determinations related to its summary judgment motion as set forth in Memorandum Opinion and Order entered on January 5, 2023 [ECF No. 512] and the Judgment Order to the extent it finalizes the same determination, entered on January 5, 2023 [ECF No. 513].

**WEST VIRGINIA SECONDARY SCHOOL  
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/s/Roberta F. Green

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**IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA  
CHARLESTON DIVISION**

**B.P.J., by her next friend and mother,  
HEATHER JACKSON,  
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**WEST VIRGINIA STATE BOARD OF EDUCATION,  
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WEST VIRGINIA SECONDARY SCHOOL  
ACTIVITIES COMMISSION, W. CLAYTON BURCH  
in his official capacity as State Superintendent, and  
DORA STUTLER in her official capacity as  
Harrison County Superintendent,  
Defendants,**

**And**

**LAINIEY ARMISTEAD,  
Defendant-Intervenor.**

**CERTIFICATE OF SERVICE**

I hereby certify that I, Roberta F. Green, have this, the 2nd day of February, 2023, served a true and exact copy of the foregoing “**Notice of Appeal**” with the Clerk of Court using the CM/ECF System, which will send notification of such filing to the following counsel of record:

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IN THE UNITED STATES DISTRICT COURT  
FOR THE SOUTHERN DISTRICT OF WEST VIRGINIA

CHARLESTON DIVISION

B. P. J., et al.,

Plaintiffs,

v.

CIVIL ACTION NO. 2:21-cv-00316

WEST VIRGINIA STATE BOARD OF EDUCATION, et al.,

Defendants.

MEMORANDUM OPINION AND ORDER

Pending before the court is Plaintiff's Motion for a Stay Pending Appeal. [ECF No. 515]. For the reasons stated herein, B.P.J.'s motion is **DENIED**.

**I. Background**

This case concerned the lawfulness of West Virginia's Save Women's Sports Act (the "Act"), a law passed by the West Virginia Legislature in April 2021. The Act classifies school athletic teams according to biological sex and prohibits biological males from participating on athletic teams designated for females. W. Va. Code § 18-2-25d(a)(5), (b), (c)(2). B.P.J., a transgender minor seeking to join her middle school's girls' cross country and track teams, filed a Complaint with this court, alleging that the Act violates the Equal Protection Clause of the Fourteenth Amendment and Title IX. [ECF No. 1]. On July 21, 2021, I granted B.P.J. a preliminary injunction enjoining enforcement of the Act against her. [ECF No. 67]. Thus, B.P.J. was able to compete on the girls' cross country and track teams during the pendency of this case.



The parties filed motions for summary judgment on April 21, 2022. [ECF Nos. 276, 278, 283, 285, 286, 289]. On January 5, 2023, I denied B.P.J.’s motion for summary judgment and granted summary judgment in favor of the State of West Virginia, the Harrison County defendants, the State Board defendants, and Intervenor Lainey Armistead (collectively, the “Defendants”). [ECF No. 512]. I also dissolved the preliminary injunction. *Id.*

On January 20, 2023, B.P.J. filed the instant motion requesting that the court stay its January 5, 2023 Order, dissolving the preliminary injunction, until her appeal is resolved. [ECF No. 515]. B.P.J. seeks this relief so that she can “continue participating on those [athletic] teams consistent with her gender identity.” *Id.* at 5. Defendants jointly responded on January 27, 2023. [ECF No. 520]. B.P.J. replied on January 30, 2023. [ECF No. 521].

## II. Legal Standard

Rule 62(d) of the Federal Rules of Civil Procedure permits the court to “restore” an injunction “[w]hile an appeal is pending from . . . final judgment that . . . dissolves . . . [the] injunction.” When ruling on a motion to stay an order, the court considers the following four factors: “(1) whether the stay applicant has made a strong showing that [s]he is likely to succeed on the merits; (2) whether the applicant will be irreparably injured absent a stay; (3) whether issuance of the stay will substantially injure the other parties interested in the proceeding; and (4) where the public interest lies.” *Nken v. Holder*, 556 U.S. 418, 426 (2009) (quoting *Hilton v. Braunskill*, 481 U.S.

770, 776 (1987)). “The first two factors . . . are the most critical,” and a party seeking a stay must demonstrate more than a mere possibility of success on the merits. *Id.* at 434.

### III. Discussion

As the Defendants have acknowledged, this was a novel and difficult case. *See* [ECF No. 520, at 13]. With respect to the instant motion, the second, third, and fourth factors weigh heavily in favor of granting B.P.J.’s motion for a stay. B.P.J. is a twelve-year-old transgender girl in middle school, often considered a memorable and pivotal time in a child’s life. For many children, the middle school experience is shaped considerably by their participation on their school’s athletic teams. B.P.J.’s experience has been no different. [ECF No. 515-1, ¶¶ 5–6]. Moreover, as I expressed in my previous Orders, not one child has been or is likely to be harmed by B.P.J.’s continued participation on her middle school’s cross country and track teams. [ECF No. 67, at 11; ECF No. 512, at 9]. Both cross country and track are non-contact sports, and B.P.J. often finishes near the end of the pack, [ECF Nos. 515-3, 515-4]. I am unpersuaded, as Defendants have argued, that B.P.J. finishing ahead of a few other children, who would have placed one spot higher without her participation, constitutes a substantial injury. In the end, the only person truly injured by the enforcement of the Act against her is B.P.J., who must now watch her teams compete from the sidelines. It is in the public interest that all children who seek to participate in athletics have a genuine opportunity to do so. Moreover, there is a public interest

in celebrating not only the unique differences of those who fit into society's binary world but also those who fall outside that box.

That said, a law is not deemed unconstitutional simply because it causes harm. When analyzing equal protection claims, courts apply different levels of scrutiny to different types of classifications. In this case, the court applied intermediate scrutiny to the Act because the Act "separates student athletes based on sex." [ECF No. 512, at 14]. This level of scrutiny applied to both B.P.J.'s facial and as-applied challenges. *See Oswald v. Ireland-Imhof*, 599 F. Supp. 3d 211, 218 (D.N.J. 2022) (applying the same level of scrutiny to the plaintiff's facial and as-applied challenges). To pass intermediate scrutiny, a law must be substantially related to an important governmental objective. *Miss. Univ. for Women v. Hogan*, 458 U.S. 718, 724 (1982).

As I explained in my Order granting summary judgment to the Defendants, B.P.J. never challenged the well-accepted practice of separating sports by sex; rather, she only challenged the state's definitions of "male" and "female," which determine the athletic team an individual may participate on. [ECF No. 512, at 10]. To achieve sex-separated sports, however, the state needed to adopt some definition to determine eligibility for participation on either team. In this case, the state, claiming an interest in promoting equal athletic opportunities for females, drew the line at biological sex determined at birth. It is common knowledge that "sex, and the physical characteristics that flow from it," are linked "to athletic performance and fairness in sports." *Id.* at 19. Thus, separating athletic teams based on biology is substantially

related to the state's important interest in providing equal athletic opportunities to females, who would otherwise be displaced if required to compete with males. The Act, therefore, is not violative of the Equal Protection Clause.

As for Title IX, which authorizes sex-separate sports, “[t]here is no serious debate that [its] endorsement . . . refers to biological sex.” *Id.* at 21–22. Like the alleged interest put forth by the state in this case, the goal of Title IX “was to increase opportunities for women and girls in athletics.” *Id.* at 21 (citing *Williams v. Sch. Dist. of Bethlehem, Pa.*, 998 F.2d 168, 175 (3d Cir. 1993)). Thus, I could not, and still cannot, find that the Act, “which largely mirrors Title IX, violates Title IX.” *Id.* at 22. As such, I am unpersuaded that B.P.J. is likely to succeed on her facial challenge of the Act on appeal.

Under the above analysis, the state is permitted to use biology as the sole criterion in separating school athletic teams. The legislature, of course, could have used less rigid definitions which would allow transgender individuals to play on the athletic team consistent with their gender identity. Indeed, more inclusive definitions might have even furthered the legislature's stated objective. “But it [was] not for the court to impose such a requirement here.” *Id.* at 19. The question before the court was whether the Act survives intermediate scrutiny, and intermediate scrutiny does not require the tightest fit between means and ends for a law to withstand constitutional muster.

B.P.J.’s as-applied challenge asked the court to consider her gender in lieu of sex and to include her in the state’s definition of “female.” To do so, the court would have needed to assess B.P.J.’s individual characteristics, which is not appropriate under intermediate scrutiny. The court was required, instead, to consider whether excluding B.P.J. from teams designated as female—because she is biologically male and males consistently outperform females in athletics—is substantially related to the important government interest of providing equal athletic opportunities for females. The court answered that question in the affirmative: intermediate scrutiny permits the line drawing between “males” and “females” adopted here by the state in the context of sports, without individual consideration of occasional outliers. *Id.* The analysis must end there. Had the court looked any further and taken B.P.J.’s gender and sex characteristics into account, it would have been applying strict scrutiny’s narrow tailoring requirement. *See id.* That analysis also would have been inconsistent with my decision to uphold the legislature’s chosen definitions of “male” and “female” for the purpose of athletics. Accordingly, I cannot find that B.P.J. is likely to succeed on her as-applied challenge of the Act on appeal.

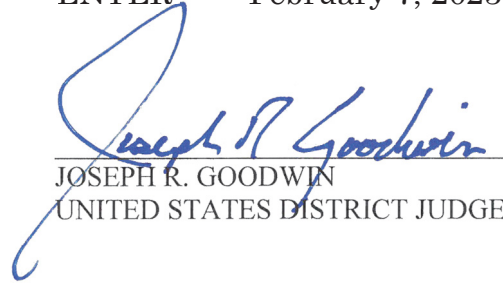
Because B.P.J. cannot satisfy the first prong of the test to obtain a stay, her motion is **DENIED**.

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#### IV. Conclusion

For the foregoing reasons, B.P.J.'s Motion for a Stay Pending Appeal [ECF No. 515] is **DENIED**. The court **DIRECTS** the Clerk to send a copy of this Order to counsel of record and any unrepresented party.

ENTER: February 7, 2023



JOSEPH R. GOODWIN  
UNITED STATES DISTRICT JUDGE